SERVICE MANUAL

AKAI CARTRIDGE STEREO TAPE RECORDER/ TUNER COMBINATIONS

MODEL CR-80T

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When placing order for parts, please use Separate
PARTS LIST or PRICE LIST FOR PARTS.

I. SPECIFICATIONS

WEIGHT : 11 Kg. (24 lbs.)
DIMENSIONS : 490(W) x 140(H) x 270(D) mm (19.6 x 5.6 x 10.4")
POWER SUPPLY : AC 100 V to 240 V ; 50/60 Hz.
RECORDING SYSTEM : In-Line 8-Track Stereo Recording
PLAYBACK SYSTEM : In-Line 8-Track Stereo Playback
TAPE SPEED : Play : 3-3/4 ips (+/−2%)
Fast Forward : 15 ips (+/−10%)
WOW AND FLUTTER : Less than 0.35% rms
FREQUENCY RESPONSE : 50 to 16,000 Hz (50 Hz ±5 dB)
(16 kHz −6 dB)
SIGNAL TO NOISE RATIO : Better than 41 dB
DISTORTION : Within 4% at 1,000 Hz "0" VU
CROSS TALK : Less than −40 dB
ERASE RATIO : Less than −60 dB
INSULATION RESISTANCE : More than 50 M Ohms
INSULATION DURABILITY : 1,000 V AC for more than one minute duration

OUTPUT
- LINE OUTPUT : 1.23 V (0 VU) +2/−4 dB using 500 Hz 0 VU Recorded Tape (Required load impedance more than 25 KΩ)
- DIN OUTPUT : 0.4 V (required load impedance more than 50 KΩ)
- MAIN OUTPUT : More than 7 W (Impedance 8 Ω)

INPUT
- LINE INPUT : 50 mV (Impedance 150 KΩ)
- DIN INPUT : 10 mV (Impedance 30 KΩ)
- MIC INPUT : 0.5 mV (Impedance 5 KΩ)
- PHONO INPUT : 3.5 mV

MOTOR : Condenser starting induction two-speed (2-8 pole) motor.
Condenser Capacity : 4 μF (50 Hz) ; 2.5 μ (60 Hz).
Revolutions : 2900 to 725 rpm (50 Hz)
3480 to 870 rpm (60 Hz)

FAST FORWARD TIME : 230 seconds using a 300 ft. cartridge tape.
RECORDING CAPACITY : 1 hr. stereo recording using a 300 ft. cartridge tape.
RECORD/PLAYBACK HEAD : In-Line 8-Track Stereo
Gap : 1/1000 mm
Impedance : 750 Ω ±15% at 1 kHz
ERASE HEAD : In-Line 8-Track Stereo
Gap : 0.1 mm
Impedance : 210 Ω ± 10% at 90 kHz

OSCILLATION FREQUENCY : 65 kHz ±5%
POWER CONSUMPTION : 60 W
TRANSISTORS USED : 1 SE3001 (2SC394)
1 2SC535 (2SC394)
1 2SK19
2 2SC945
5 2SC838
4 2SC693FU
4 2SC711 (D)
2 2SC971 (2) (3)
1 2SC1061 (A) (B) (C)
2 2SC968 (4)
IC USED : 2 AA072D
2 STK-011A
2 LD3120
SILICON DIODES USED : 6 10D1
1 10DC1 (red)
1 10DC1 (blk)
1 10D4
4 1N60
8 1N34A
1 15338

FM TUNER SECTION
FREQUENCY RANGE : 88 to 108 MHz
INTERMEDIATE FREQUENCY : 10.7 MHz
SENSITIVITY : 3 mV (IHF)
S/N RATIO : Better than 55 dB
FM STEREO SEPARATION : Better than 28 dB
HARMONIC DISTORTION : Less than 1.5%
IMAGE FREQUENCY RATIO : Better than 50 dB at 98 MHz
SELECTIVITY : Better than 40 dB
ANTENNA INPUT IMPEDANCE : 300 Ω balanced ; 75 Ω unbalanced

AM TUNER SECTION
FREQUENCY RANGE : 535 to 1605 kHz
INTERMEDIATE FREQUENCY : 455 kHz
SENSITIVITY : Better than 55 dB
S/N RATIO : Better than 40 dB
HARMONIC DISTORTION : Less than 1.0% (400 Hz. 30% mod. in 74 dB)
IMAGE FREQUENCY RATIO : Better than 45 dB
SELECTIVITY : Better than 30 dB

II. MEASURING METHOD

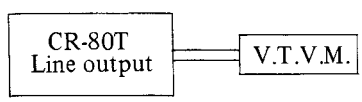
TAPE SPEED DEVIATION

Method involving use of pre-recorded tape
Playback a tape pre-recorded at 1000 Hz (±0.1%) on recorder to be tested. Connect the appropriate output to a frequency counter meter in order to measure the tape speed deviation.

WOW AND FLUTTER

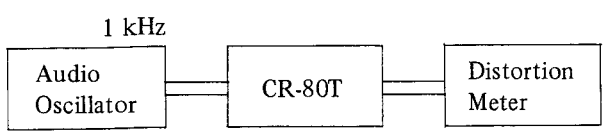
Playback a 3,000 Hz pre-recorded tape of which the wow and flutter level is guaranteed to be smaller than 0.07% for measurement by means of a wow meter. It is also possible for a 3,000 Hz sine wave to be recorded and played for measurement by means of the wow meter. In this case, however, the wow meter indicates a value as much as twice the value given in the specifications.

SIGNAL TO NOISE RATIO



Playback a tape containing a 1,000 Hz sine wave recorded at "0" VU level on a standard recorder. Connect a V.T.V.M. to the line output jack of the recorder and measure its output.
Then remove the tape and measure the noise level under the same condition. Convert each of the measured values into decibels.

TOTAL HARMONIC DISTORTION FACTOR



Connect the measuring instrument as shown above, and record a 1,000 Hz sine wave at "0" VU. Playback the resultant signal and measure the overall distortion factor. Measure the noise level of the tape recorder with the tape removed ; connect the audio oscillator directly to the distortion meter for measurement of the distortion factor of the oscillator.
The required distortion factor may be obtained from the results of the above measurement by the following formula.

$$d_0 = d - d_1 - d_2$$

where, d_0=Required
d =Overall distortion factor
d_1=Noise level
d_2=Distortion factor of the oscillator

(Note : New tape of particularly good quality should be used for measurement of the distoriton factor Fuji (AKAI) "L" is recommended).

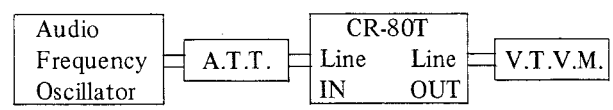
POWER OUTPUT

Playback a tape containing a sine wave of 500 Hz recorded at 0 VU on a standard recorder.
Measure the voltage at the speaker output of the recorder to be tested when terminated with 8 Ω.
Then use the following formula :

$$P = \frac{E_2}{R}$$

P = Desired output (W)
E = Measured Voltage (R.M.S.)
R = 8 Ω

FREQUENCY RESPONSE

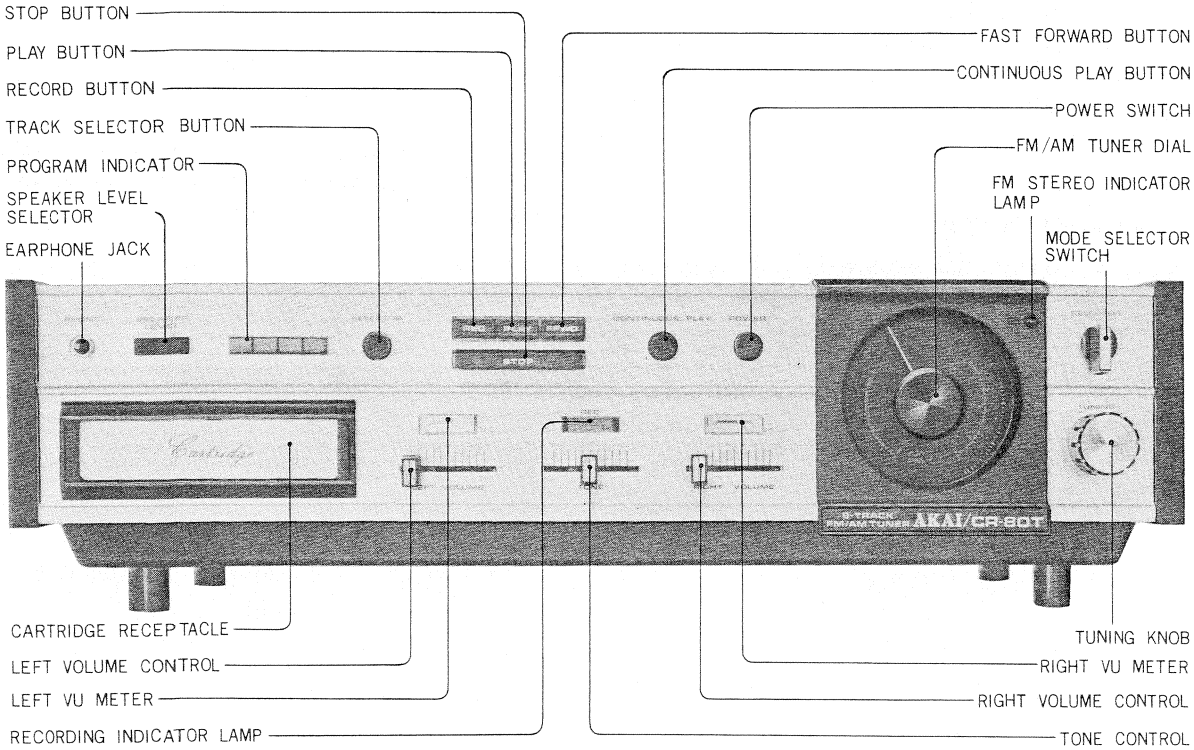


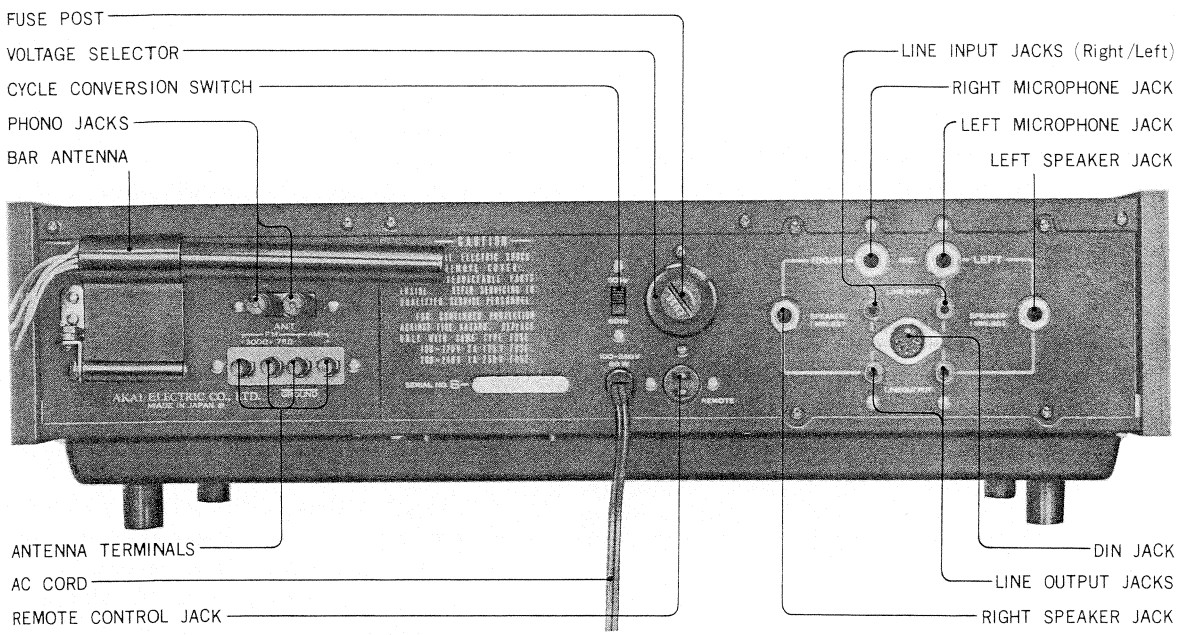
Connect the measuring instrument as in the above diagram, and measure the frequency response in the following sequence :
RECORD :
1) Supply a sine wave of 1,000 Hz to the Line Input of the recorder to be tested through an attenuator from an audio frequency generator.
2) Set the Recorder to Recording Mode and adjust the line input volume so that the VU meter needle indicates "0" VU.
3) Under the condition described in (2), lower the input level 10 dB by means of the attenuator.
4) Record the spot frequency in the range of 50 Hz to 16,000 Hz from the audio frequency generator.

PLAYBACK :
5) Depress Play Button.
6) Connect a High sensitivity V.T.V.M. to the Line output.
7) Playback the tape previously recorded.
8) Adjust the output level to "0" dBm at 1,000 Hz (indicated on the range selector of the V.T.V.M.)
9) Playback the recorded spot frequencies under the conditions in (8) ; make memo of output level and plot the value on a graph.

Note : (New tape of particularly good quality should be used for measurement of the freqancy response Fuji (AKAI) "F" tape is recommended).

III. CONTROL LOCATIONS

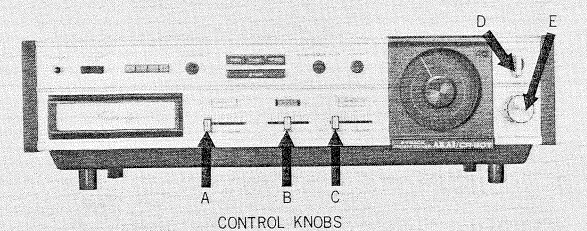




IV. DISMANTLING OF TAPE TRANSPORT UNIT & AMPLIFIERS

In case of trouble, etc. necessitating disassembly, please disassemble in the order shown in photographs. Reassemble in reverse order.

1



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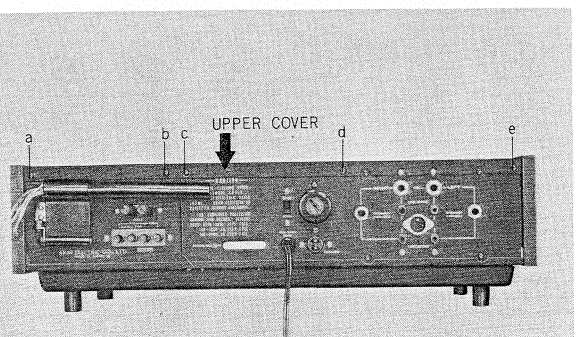

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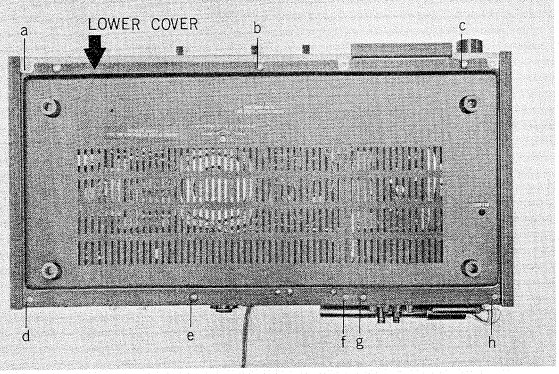

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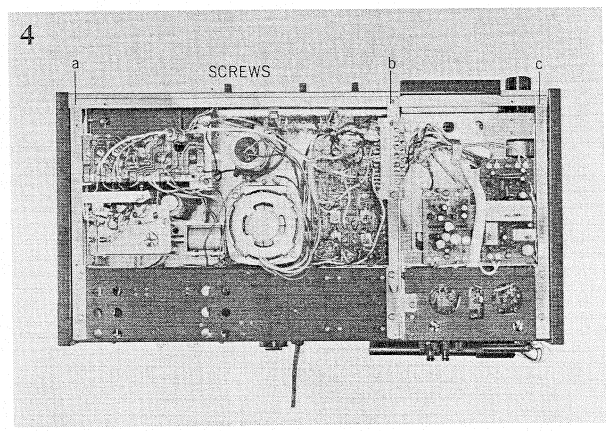

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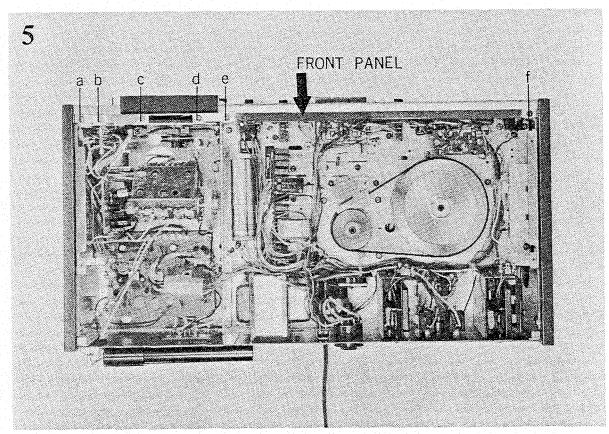

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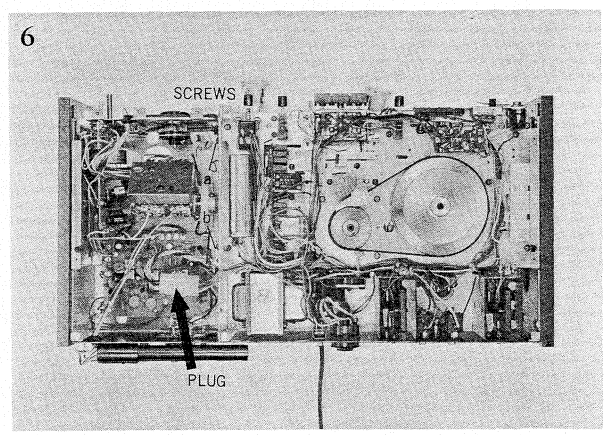

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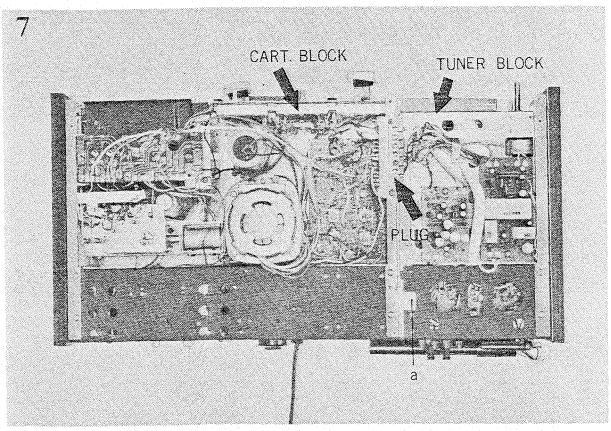
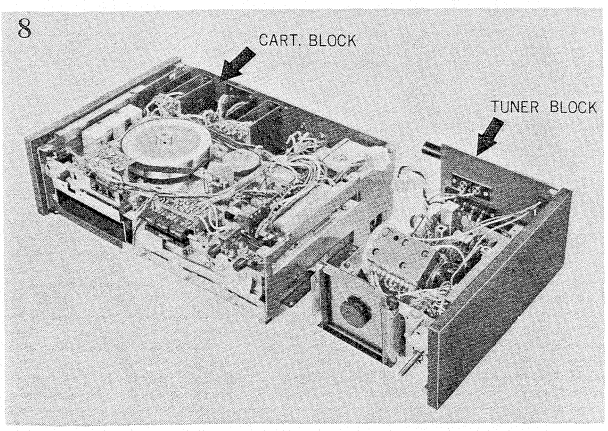
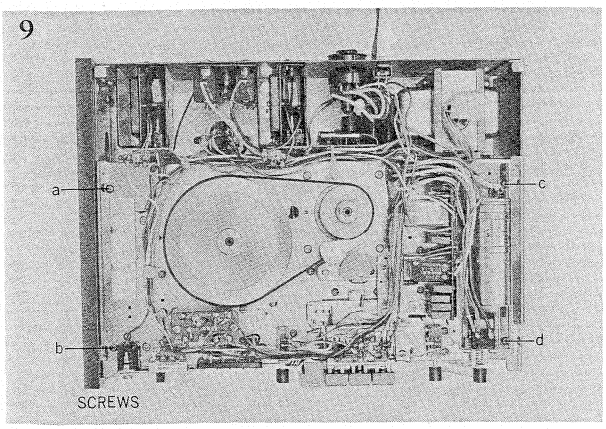

CART. BLOCK
TUNER BLOCK
PLUG
a

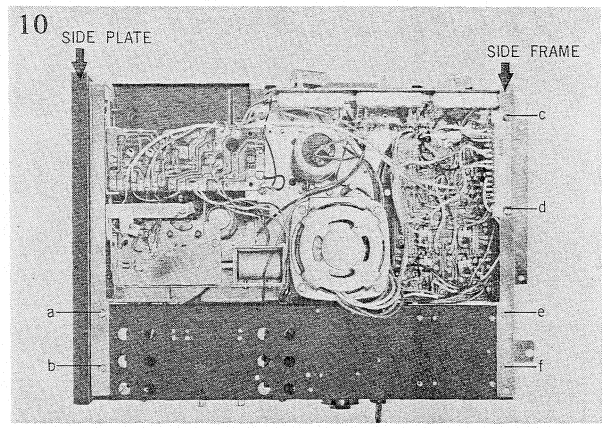
8


CART. BLOCK
TUNER BLOCK

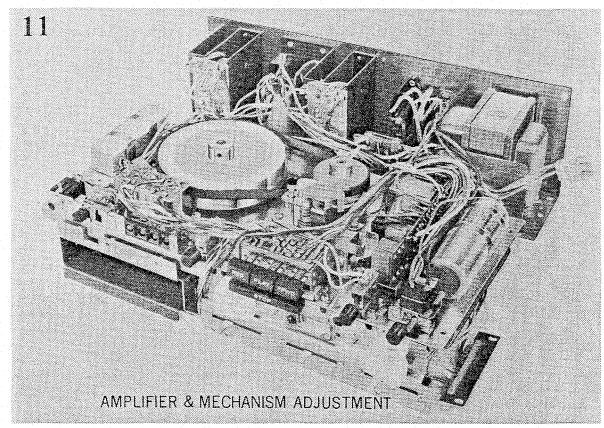
9


a
b
c
d
SCREWS

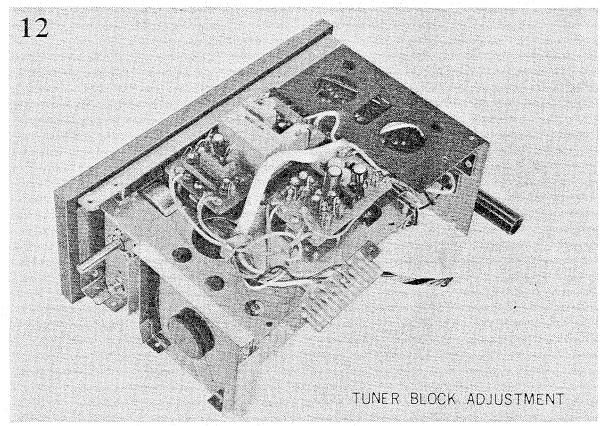
10


SIDE PLATE
SIDE FRAME
a
b
c
d
e
f

11


AMPLIFIER & MECHANISM ADJUSTMENT

12


TUNER BLOCK ADJUSTMENT

V. MECHANISM ADJUSTMENT

1) HEAD ADJUSTMENT (Part I)

1-1) Adjustment of azimuth alignment (See Fig. 1)
Playback an azimuth alignment Test Tape (8,000 Hz recorded tape) and set the azimuth alignment of head assembly by turning screw (c') until maximum playback output of program 2 or 3 is obtained.

1-2. Height adjustment (See Fig. 1)

A) Playback *a test tape and turn screw (d) until maximum gain of program 1 is obtained.

B) Set *a blank test tape to recorder, make a recording, and then make an erasing test. If erasing is not complete, adjust as follows :

(I) Turn screws (a) and (b) clockwise simultaneously forty-five degrees and then make erasing test again.

Note : The blank test tape should be demagnetized every time an erasing test is made.

(II) If the erasing is not complete after the above adjustment, turn screws (a) and (b) clockwise again ten to fifteen degrees simultaneously.

(III) If erasing is still not complete, repeat step 2) until complete erasure is accomplished. Playback Azimuth Alignment test tape again and turn screw (c') until maximum program gain of program 2 or 3 is obtained.

(IV) Playback test tape again and turn screw (d) until maximum gain of program 1 is obtained.

* TEST TAPE
This test tape is specially designed by AKAI for Height Adjustment tests.

Program 1	1,000 Hz
Program 2	Blank
Program 3	1,000 Hz
Program 4	3,000 Hz

* BLANK TEST TAPE
This is also a special tape designed by AKAI. Duration of tape is only 15 seconds.

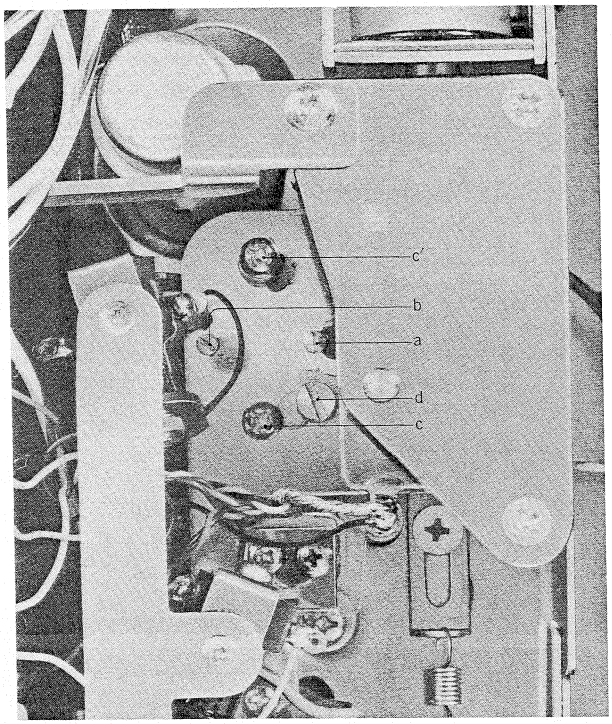


Fig. 1

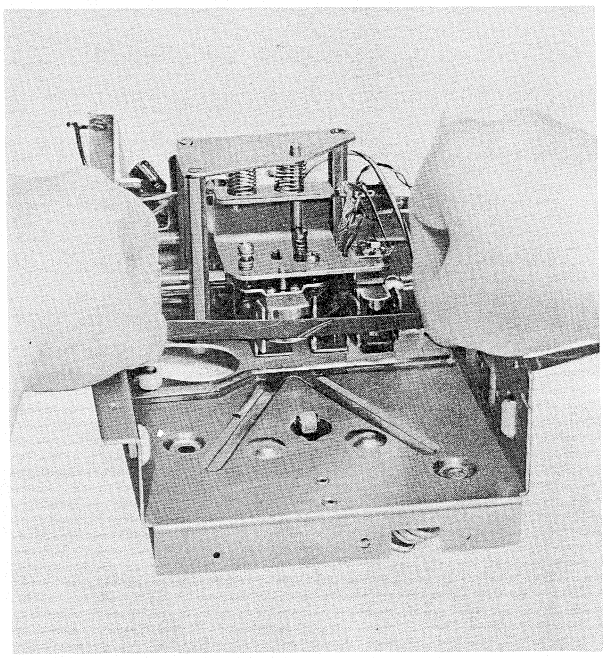


Fig. 2

2) HEAD ADJUSTMENT (PART II)

If head adjustment as outlined in PART I is difficult to perform, separate head block from unit. Cut and thread a short piece of tape by hand and adjust as shown in Fig. 3.

2-1 ADJUSTMENT OF HEAD HEIGHT (See Figs. 2 and 3).

A) Erase Head
Adjust the Erase Head Height by turning head height screw (d) so that the upper edge of the tape as it passes the erase head is 0.0625 to 0.075 mm below the top edge of Program 1 head core.

B) PLAYBACK HEAD
Adjust the Playback Head Height by turning head height screws (a) and (b) in the same manner so that the upper edge of the tape as it passes the playback head is exactly parallel with Program 1 playback head core.

C) After adjustments (a) and (b) have been completed, switch Program Selector to Program 4 and confirm that position of tape is as shown in Fig. 3 (b). If position differs from Fig. 3 (b), carry out adjustments descrebed in (a) and (b) again.

2-2 ADJUSTMENT OF IZUMUTH ALIGNMENT
After (a), (b) and (c) of Head Adjustment (Part II) has been completed, reassemble head block (put back in unit) and carry out Azimuth Alignment as outlined in Head Adjustment Part I, Item 1-1.

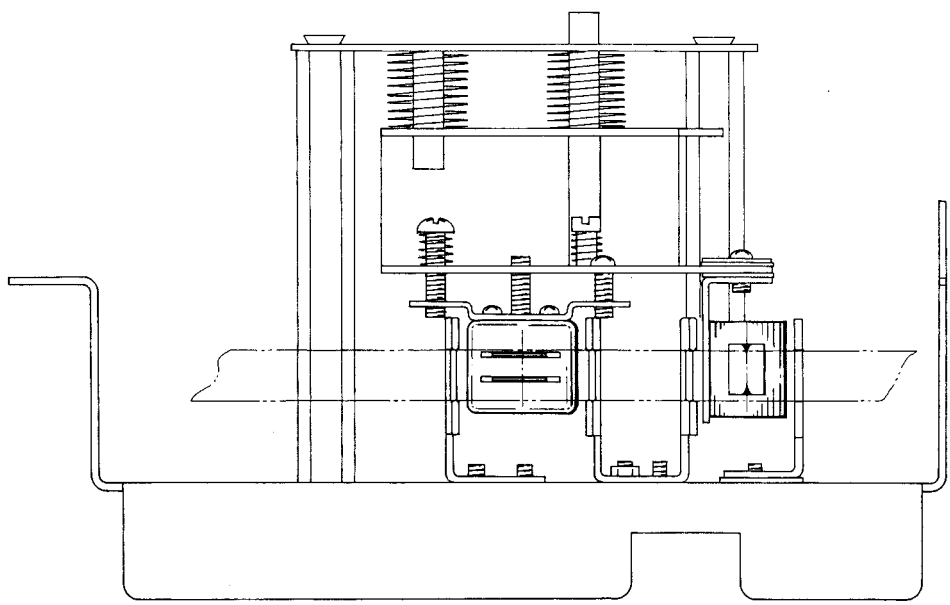


Fig. 3 (a)

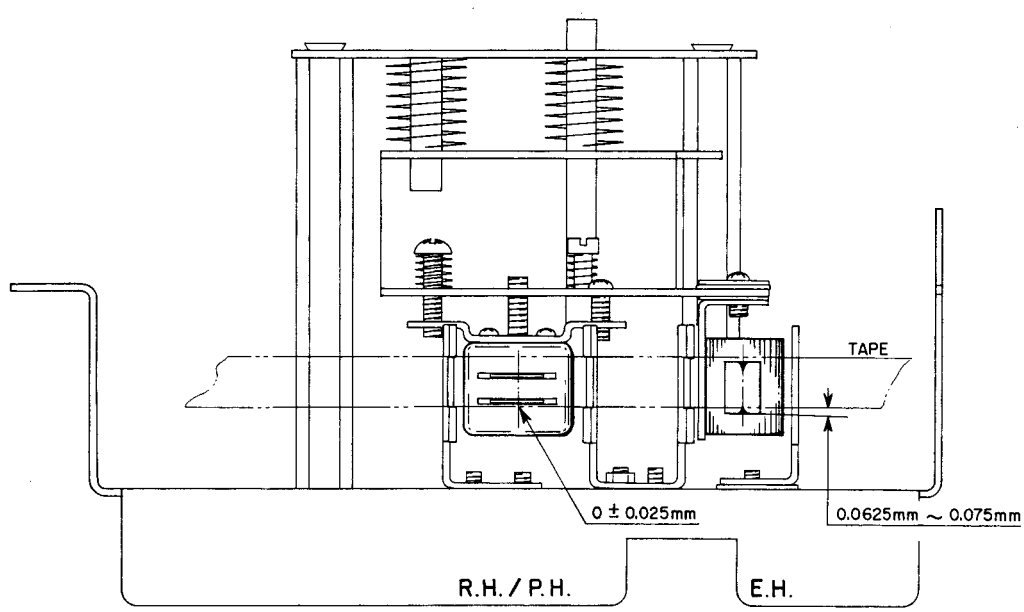
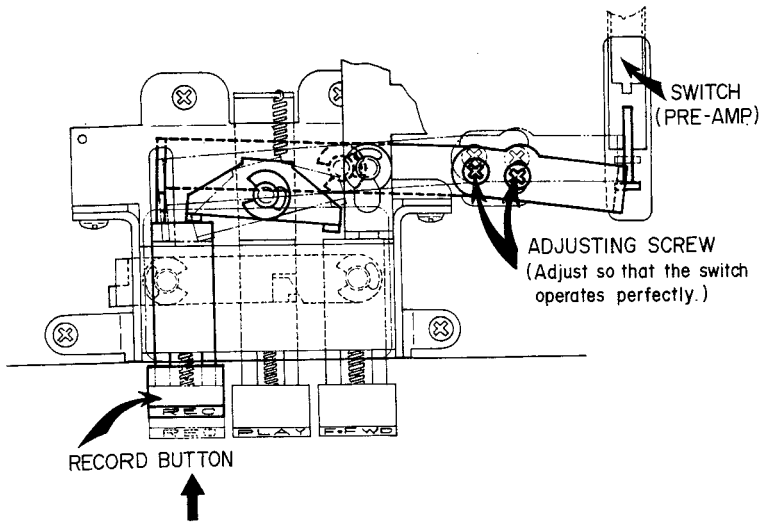
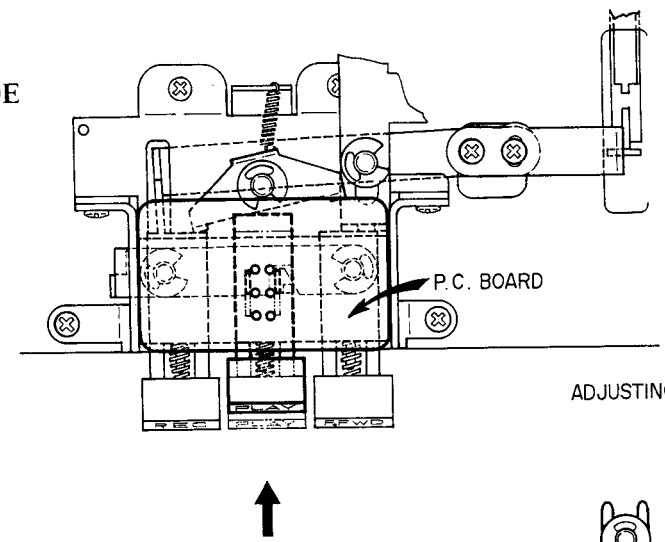


Fig. 3 (b)

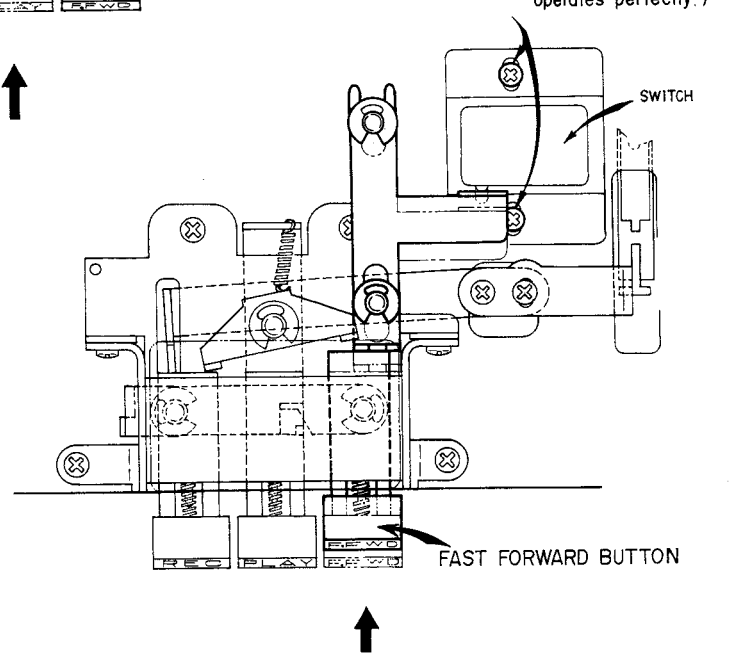
3) RECORDING MODE



4) PLAYBACK MODE



5) FAST-FOWARD MODE



VI. AMPLIFIER ADJUSTMENT

1. ADJUSTMENT OF RECORDING BIAS FREQUENCY (See Fig. 1)

a) Put on the resistor 1 or 2 Ohms in series with the Bias Head and connect the Vertical Input Terminal of the Oscilloscope to points (A) and (B).

b) Feed in a sine wave signal from an Audio Frequency Oscillator to the Horizontal Input of the Oscilloscope and tune the Dial of the Audio Frequency Oscillator until the Oscilloscope displays a circular or linear pattern. Then read the figure on the Dial of the Audio Frequency Oscillator.

c) If is reads 65 kHz (±5 kHz). the Recording Bias Frequency is correct.

d) If incorrect, it may be adjusted by inserting another condenser (C-404) value 1000 PF (820 PF).

2. ADJUSTMENT OF RECORDING BIAS VOLTAGE

Connect a V.T.V.M. to point (a) and (b) and measure the Bias Voltage. Correct Bias Voltage is between 18 to 20 V AC. Adjustment can be made with VR401 and VR402.

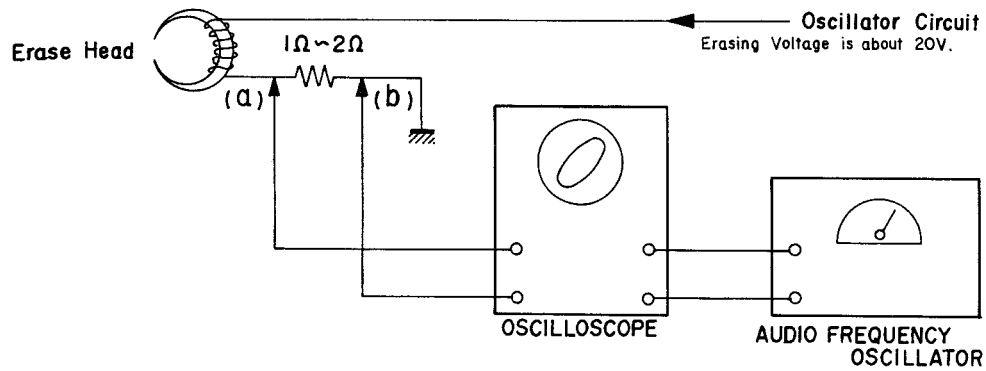


Fig. 1

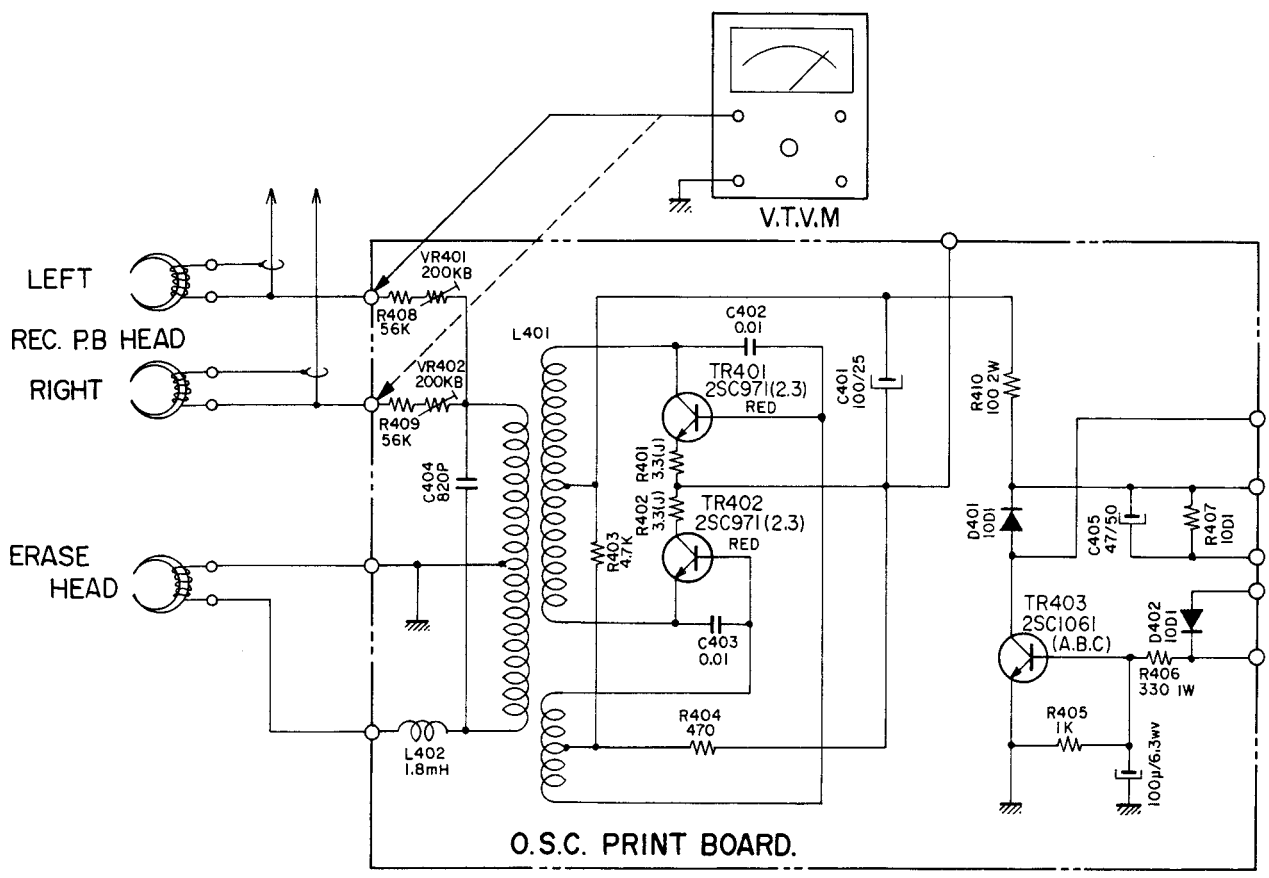


Fig. 2

3. ADJUSTMENT OF LINE OUTPUT LEVEL PLAYBACK (See Fig. 3)

1) Turn Volume Control (VR-1) (50 KA) up to maximum.
2) Set machine to "Play" position.
3) Connect a V.T.V.M. (use VTVM with milli-volt scale) to the Line Output Jack.
4) Play back a Test Tape (500 Hz "0" VU redorded) and turn the volume (VR-101) (20 KB) until the line output level reaches +4 dB 1.228 V.

4. RECORDING AND PLAYBACK (Figs. 3 and 4)

1) Load a Blank Test Tape.
2) Set recorder to Recording Mode.
3) Supply a 1000 Hz sine wave signal from an Audio Frequency Oscillator through the attenuator to the Line Input of CR-80T and adjust the attenuator so that the VU Meter needle indicates "0" VU (intermediate between red and black).
4) After a few seconds of recording, playback the recorded tape from the starting position, turning the main volume CVR-1) up to maximum.
5) If the line output level does not reach 0 dB ($\pm\frac{2}{4}$dB) repeat recording and playback procedure (from item 3), adjusting semi-fixed VR-102 (2 KB) until 0 dB ($\pm\frac{2}{4}$dB) is obtained, both on recording and playback.

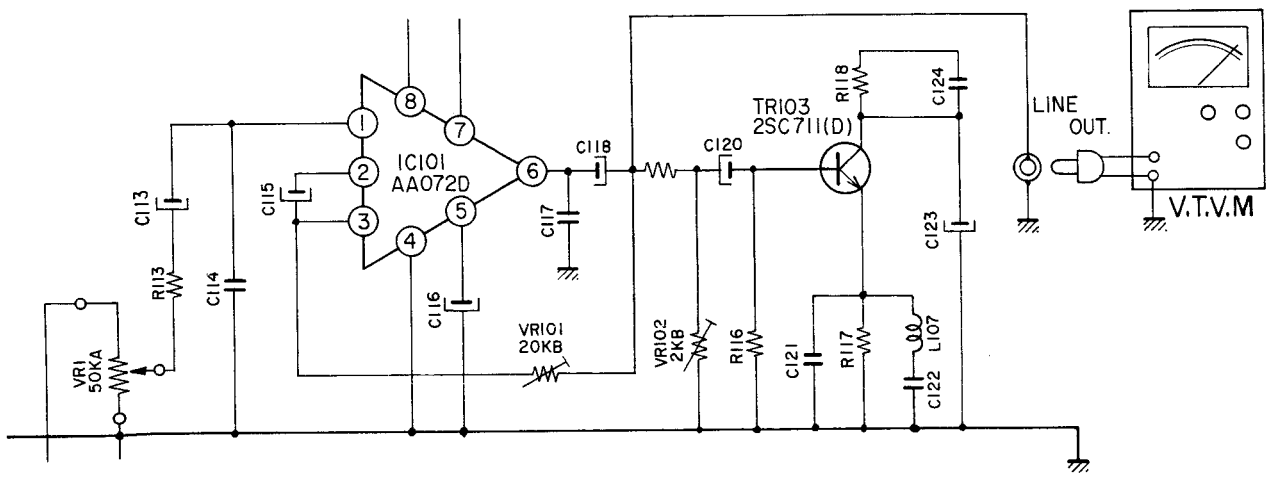


Fig. 3

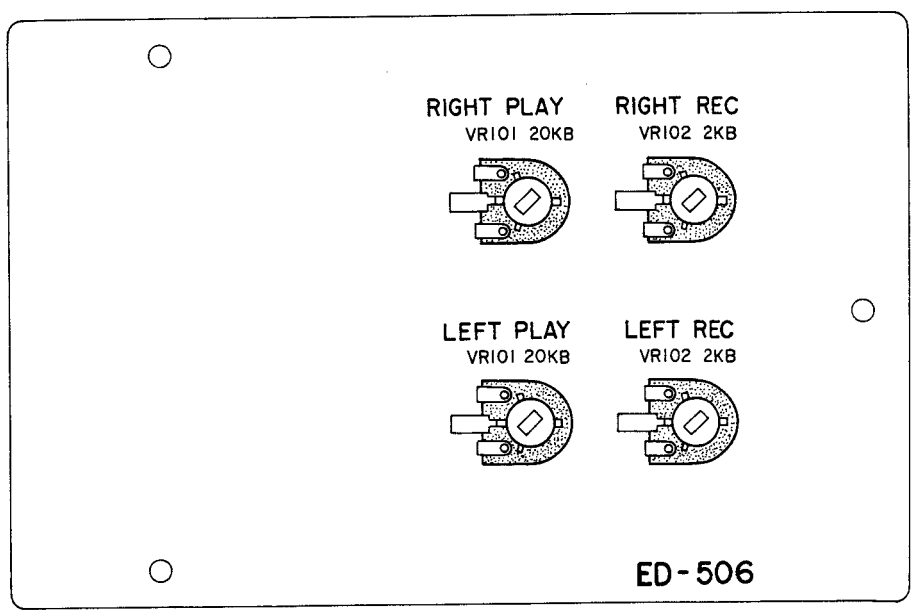


Fig. 4

VII. TUNER SECTION ADJUSTMENTS

1. FM IF CIRCUIT (ED-A573 P.C. Board)

FM IF Circuit adjustment should be made with calibrated instruments because this adjustment has a great influence on tone quality, separation, S/N Ratio, etc. in stereo FM reception

1-1. Instruments required :

- AM-FM IF Genescope

1-2. Instrument Connections :

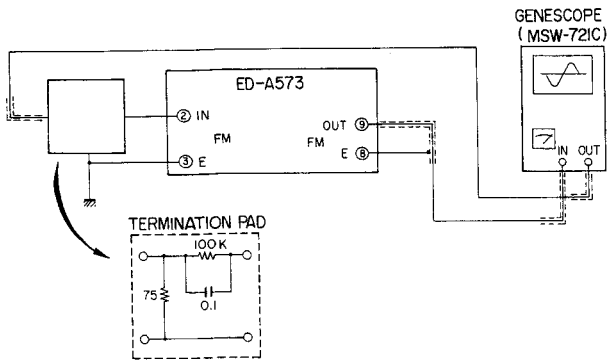


Fig. 1

a) Connect the output lead of the Genescope (MSW-721C) to test point (IN ②) and (E ③) on IF printed board ED-A573.
b) Connect the input lead of the Genescope to test points FM Out ⑨ and ⑧ .
c) Set Frequency Band of the Genescope to 10.7 MHz.
d) Adjust V-POSITION, SWEEP-WIDTH, and CENTER FREQUENCY so that the waveforms are is the center of the Oscilloscope.
e) Set Selector Switch on the front panel of Model CR-80T to "FM" position.
f) Tuning Dial should be set to a non-receiving point on the dial.

1-3. IF Transformers (10.7 MHz) Adjustments

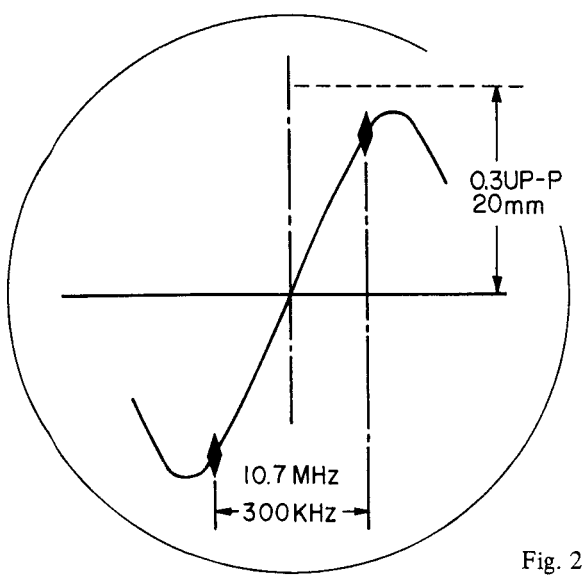


Fig. 2

a) For adjustment of cores of FM-IF transformers, adjust with 40 dB (100 μV) output level of the Genescope.
b) With V-Gain, adjust 0.3 Vp-p calibration of IF Genescope to 20 mm (Fig. 3).
c) Adjust the upper and lower cores of T-22 and T-21 (GRN) to obtain the waveform as shown in Fig. 2. Adjust to maximum amplitude and proper linearity (between ±150 kHz markers).
d) Then change the output lead of the Genescope to FM antenna terminal.
Next, change output level of the Genescope to about 90 dB.
Adjust the core of IF (Front End) to obtain the waveform shown in Fig. 3.

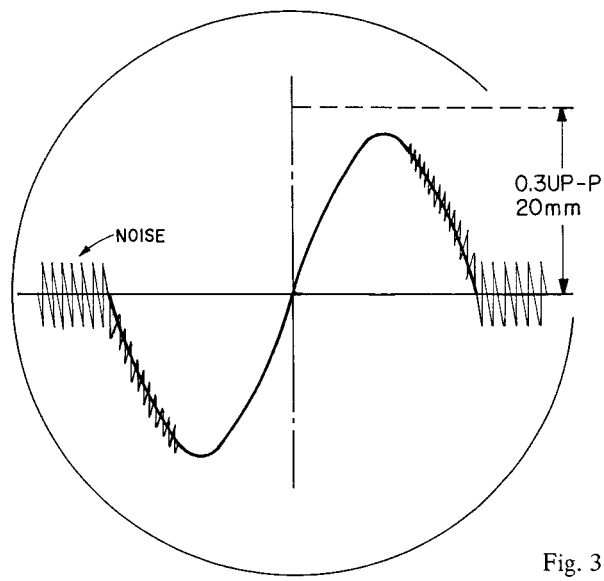
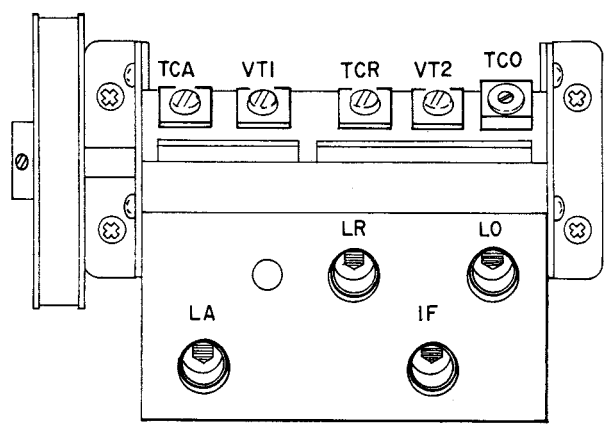


Fig. 3



TOP VIEW OF FRONT END

Fig. 4

2. ADJUSTMENT OF FM RECEPTION FREQUENCY RANGE

2-1. Instruments Required :
FM Signal Generator
Distortion Meter

2-2. Instrument Connections

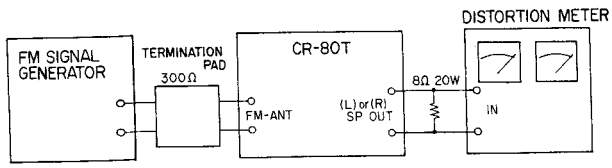


Fig. 5

a) Connect the Signal Generator (MSG-276A) output lead to the FM Antenna Terminals of CR-80T through the 300 Ω termination pad.
b) Set Selector to "FM" position.
c) Connect an 8 Ω 20 W dummy load to the speaker output terminals of both R and L Channels, and connect a Distortion Meter to the dummy load of either L or R Channel.

2-3. Adjustments
a) Set the Signal Generator frequency to 86.9 MHz (internal modulation 400 Hz, 100%) and the output to 30 dB.
b) Set the Tuning Dial to the left end of the dial. Adjust LO of the front end (See Fig. 4) so that the Distortion Meter Level indicates maximum.
c) Set Signal Generator frequency to 108.3 MHz. Set the Tuning Dial to the right end of the dial. Adjust TCO of the front end (See Fig. 4) so that the Distortion Meter Level indicates maximum.

CAUTION : When 86.9 MHz is adjusted with LO, because 108.3 MHz will also be relatively adjusted, it is better not to move TCO too much (There are many tuning points and it becomes difficult to determine the right ones).

3. FM TUNER TRACKING ADJUSTMENT

3-1. Instrument Connections
Use the same instruments as used in item 2-2 (Fig. 5) and connect them in the same way.

3-2. Adjustments
a) Set the Signal Generator Frequency to 90.0 MHz (internal modulation 400 Hz, 100%), and the output to 40 dB.
b) Turn the tuning dial to receive the 90.0 MHz signal. Then decrease the output of the Signal Generator so that the distortion factor on the meter is approximately 3%.
c) Adjust the cores of LA and LR on the front end of Model CR-80T (See Fig. 4) so that the Distortion Meter Level indicates maximum and the distortion factor is 3%.
(Because distortion is changed by adjustment of LA and LR, with FM Signal Generator Output Adjustment, bring distortion to 3%).
d) Set the Signal Generator Frequency to 106 MHz, then turn the Tuning Dial to receive this signal. Adjust the trimmer condensers TCA and TCR of the tuning variable condenser in the front end so that the Distortion Meter Level indicates maximum and distortion factor is 3%.
e) Repeat Steps c) and d) until no further improvement is possible.

4. SEPARATION ADJUSTMENT

4-1. Instruments Required :
FM Signal Generator
Stereo Modulator
Milli-Voltmeter (VTVM)

4-2. Instrument Connections

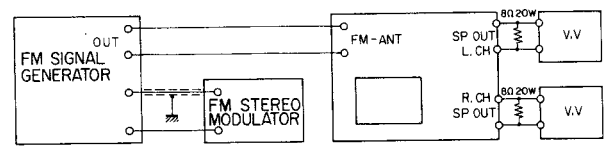


Fig. 6

4-3 Adjustment
a) Adjust Pilot Signal 19 kHz of the FM stereo modulator to 10% modulation and adjust Main Signal (L + R) of the FM stereo modulator to 400 Hz, 90%. Then connect output to Ext. Mod Terminals of FM Signal Generator.
b) Set the FM Signal Generator to EXT. Mod and its modulation to 100%.
c) Set the FM Signal Generator Frequency to 98 MHz and the output voltage to 60 dB. Connect output to the FM-Ant Terminals of CR-80T.
d) Connect an 8 Ω 20 W dummy load resistor to the speaker terminal of CR-80T and a milli-voltmeter (VTVM) to both terminal ends.
e) Receive signal from FM Generator by tuning CR-80T.
f) Turn MPX-Separation variable resistor VR-1 (located at bottom of chassis near Selector Switch assembly) fully clockwise.
g) Set the FM Stereo Modulator Signal to MAIN (L + R) and check whether the outputs of both channels are balanced. If they are out of balance, adjust by turning attenuator on the FM Signal Generator.
h) Set the FM Stereo Modulator Signal to "L". Then adjust VR-1 so that "R" channel output becomes minimum.
i) Set the FM Stereo Modulator Signal to "R" and note the indication of the milli-voltmeter connected to "L" channel. Readjust VR-1 so that the leakages of R channel and L Channel are as closely balanced as possible.

5. STEREO INDICATOR LAMP

With connections as shown in Fig. 4-2, the indicator lamp should light at an output of over 30 dB. If it does not light, IF Adjustment or Separation Adjustment is necessary.

6. AM-IF CIRCUIT ADJUSTMENT

6-1. Instrument Connections

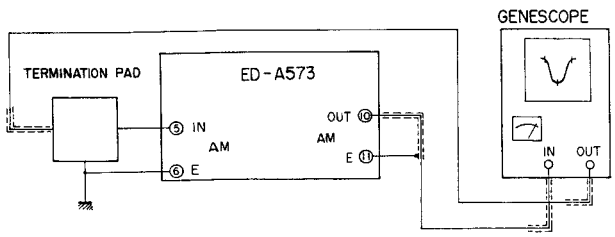


Fig. 7

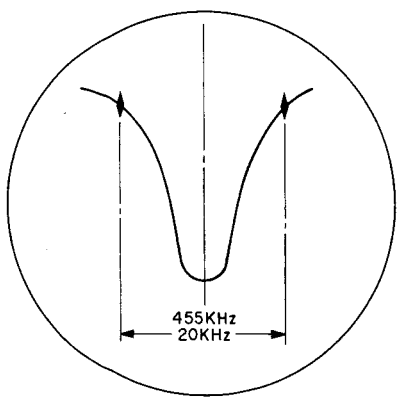


Fig. 8

6-2. Adjustments

a) Connect the Genescope output lead to Test Point IN ⑤ and E ⑥ of If Circuit Board ED-A573. Connect the Genescope input lead to Test Point OUT ⑩ and E ⑪ (Fig. 9).

b) Set the Genescope Frequency Band to 455 kHz. Adjust V-POSITION, SWEEPWIDTH and CENTER FREQUENCY respectively so that the waveform is at the center of the scope.

c) Turn Selector to "AM" position and Volume to minimum.

d) With V-Gain, adjust 0.3p-p calibration of IF Genescope to 20 mm.

e) Adjust the Genescope output to approximately 75 dB. Then adjust T-24, T-25, and T-26 so that the waveforms shown in Fig. 8 are obtained. Adjust them so that the center markers divide the waveforms into two symmetrical parts and the highest peak value is obtained.

7. AM RECEIVING FREQUENCY RANGE ADJUSTMENT

7-1. Instruments Required

AM Signal Generator
Distortion Meter
Test Loop Antenna

7-2. Instrument Connections

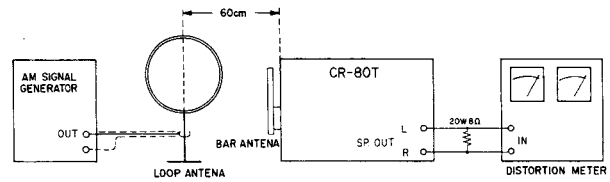


Fig. 9

7-3. Adjustments

a) Connect the AM Signal Generator to the Loop Antenna. Then position Loop Antenna to 60 cm between Loop Antenna and CR-80T. Connect an 8 Ω 20 W dummy load resistor to the left speaker terminal (or right terminal) and connect a distortion meter to terminal ends. Keep the Volume turned up half-way.

b) Set Tuning Dial to the left end of the dial. Set the AM Signal Generator to 400 Hz, 30% internal modulation, and frequency to 520 kHz. Adjust AM Signal Generator output so that the Distortion Meter indicates 10% (about 60 to 80 dB).

c) Adjust the cores of AM local oscillator coil T23 on IF Board ED-A573 so that the level meter indicates maximum.

d) Turn Tuning Dial to the right end of the dial. Set the AM Signal Generator Frequency to 1650 kHz and adjust trimmer condenser VT-2 of the AM local oscillator variable condenser of the front end so that the Level Meter indicates maximum.

e) Repeat procedures (a), (b), (c), and (d) until no further improvement is possible.

8. AM TUNER TRACKING ADJUSTMENTS

8-1. Instrument Connections

Use the same instruments and connections as shown in Fig. 9.

8-2. Adjustments

a) Set the AM Signal Generator Frequency to 600 kHz (internal modulation 400 Hz, 30%) and the output to 70 dB. Turn the dial of CR-80T to receive the 600 kHz signal.

b) Adjust the core of the Ferrite Bar Antenna so that the Level Meter which is connected to the speaker terminals indicates maximum.

c) Next, set the AM Signal Generator Frequency to 1,400 kHz, and turn the Tuning Dial of CR-80T to receive the 1,400 kHz signal. Adjust VT-1 on the front end so that the Level Meter which is connected to the speaker terminals indicates maximum.

d) Repeat procedures a), b), and c) until no further improvement is possible.

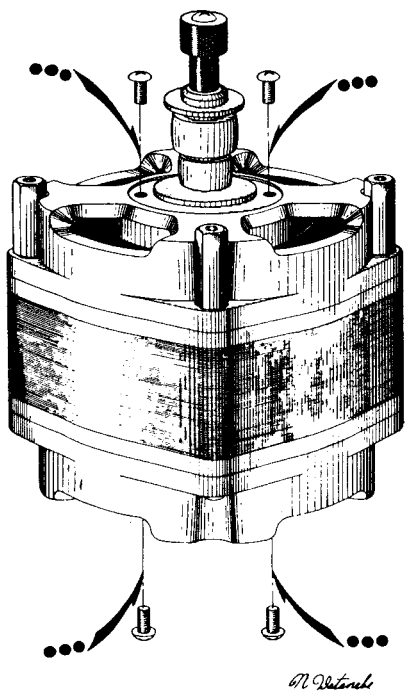
VIII. MAINTENANCE PROCEDURE

1. LUBRICATION INSTRUCTION

For maximum service life and optimum performance, lubricate the parts identified below after each 500 hours of operation. Use only light machine oil of good quality.

Motor (See Fig. 1)

CAUTION : DO NOT OVER-LUBRICATE, AND WIPE OFF EXCESS OIL WITH A COTTON SWAB SOAKED IN ALCOHOL. OTHERWISE, THE EXCESS LUBRICANT MAY BE SCATTERED DURING OPERATION, AND THE RUBBER COMPONENT PARTS WILL DETERIORATE.



● 1 drop MOTOR

Fig. 1

IX. TROUBLE SHOOTING CHART

SECTION "A" TAPE TRANSPORT MECHANISM TROUBLE

Symptom	Trouble
Capstan does not rotate (Trouble with motor)	1. Broken field coil 2. Defective motor starting capacitor (C7) 3. Rotor shaft dragging dueto lack of oil 4. Foreign matter between rotor and stator
(Trouble with power transmission mechanism)	1. Broken capstan drive belt 2. Capstan drive belt off of driving position 3. Motor bushing slipping on motor shaft 4. Oil adhering to motor bushing and/or flywheel
Tape speed slow (Trouble with motor)	1. Rotor shaft dragging due to lack of oil 2. Defective motor starting capacitor (C7)
(Trouble with power transmission)	1. Capstan drive belt stretched and slipping on motor bushing 2. Capstan drive belt not in correct driving position 3. Oil adhering to motor bushing and/or flywheel
Wow/Flutter (Irregular tape movement) (Trouble with motor)	1. Decreased motor torque 2. Defective motor starting capacitor (C7)
(Trouble with power Transmission mechanism)	1. Capstan drive belt stretched and slipping 2. Unbalanced flywheel rotation 3. Rubber on pinch wheel deteriorated 4. Dirty head surfaces 5. Tape itself defective
Unit does not operate in Fast-Forward mode (Motor does not rotate at Fast-Speed)	1. Broken field coil 2. Function switch does not operate properly
Squeaking noise when playing	1. Deposit of dust on heads 2. Recording tape is being charged with static electricity 3. Head surface over-heated after continued operation 4. Old and worn-out recording tape 5. Inferior recording tape
Cycle Change Switch does not move	1. No lubrication on cycle conversion lever 2. Eccentric or bent cycle conversion lever 3. Capstan drive belt not on driving track of flywheel 4. Loose motor bushing 5. Loose motor mount screw 6. Oil on motor bushing or on flysheel
Cartridge auto stop does not work properly (B + voltage supply to the Relay)	1. Relay (RL-701) defective 2. Check TR-701 to 703 3. Function switch does not work properly
(No B + Voltage supply)	1. D301 (10DC-1) or C302 (1000/10) defective
Cartridge Program Selector does not operate (When operating the Program Selector Button)	1. Solenoid coil (RL-1) defective 2. Program changing switch (SW-3) defective 3. R406 (330 1W) or C406 (100 μ 6.3WV) defective.
(When on automatic)	1. Sensing tape itself defective. 2. Loosing contact point. 3. D402 (10DC-1) defective.

SECTION "B" TROUBLE WITH AMPLIFIER

1. PLAYBACK SYSTEM TROUBLE

Symptom	Trouble
No sound from Line-out Jack (No B(+) voltage supply)	1. Silicon diode D302 (10DC1 BLK) or D303 (10DC1 RED) defective 2. R301 (330 Ω) defective
(B(+) voltage supply)	1. Check for defect by measuring voltage at check points and comparing them with normal channel or normal voltage 2. Check transistor TR101 ~2 and IC-101 3. Playback head coil open or lead wire loose
No sound from speaker (No B(+) voltage supply)	1. Silicon diode D302 (10DC1 BLK) or D303 (10DC1 RED) defective
(B(+) voltage supply)	1. Main amp protection fuse (0.9A) defective 2. Check transistor TR101 ~2, IC-101, IC-501
Sound but volume insufficient (B(+) voltage low)	1. Silicon diode D302 or D303 difective 2. R301, R112 defective 3. C111, 112, 301 defective
(B(+) voltage normal)	1. Dirty head surface 2. Check transistor TR101, 2 and IC-101, 501
Loud hum noise (Hum noise is decreased if playback head is graunded)	1. Playback head shield or insulation defective
(No change even when playback head is grounded)	1. Ground wire loose 2. C301, 302, 111, 112 defective 3. Adjust hum adjusting coil
(Inductive pick up)	1. Ground the recorder 2. Change the set position of the recorder
Irregular scratching or crackling noise	1. Transistor TR101, 2, IC-101, 501 defective
Squeaking noise	1. Dirty head surface 2. Tape itself defective
Hissing Noise (Noise present when playing tape)	1. Head is magnetized 2. Tape itself noisy
(Not caused by tape)	1. Transistor TR101, 2 IC-101, 501 defective
Lack of treble	1. Poor contact between head and tape. (Dirty head surface) 2. Head angle incorrect 3. Head worn-out 4. Tape itself defective
Sound distorted	1. Dirty head surface 2. Check transistor TR101, 2 and IC-101, 501 3. Head worn-out

2. PHONO TROUBLE

Symptom	Trouble
No sound when utilizing phono position (Tape, AM, FM ok)	1. Check voltage EQ amp 2. IC71, 72 defective 3. Phono input jack loose connection 4. Check Selector Switch (SW5a ~c)

3. RECORDING TROUBLE

Symptom	Trouble
Does not record (No VU meter indication)	1. VU meter itself or lead wire defective 2. Defective input jack 3. REC/PLAY slide switch (Sw101A ~B) does not function properly 4. Check Selector Switch (SW5a ~c)
(VU meter indication is normal)	1. Transistor TR-103 defective 2. Dirty head surface 3. Components of oscillator circuit (TR-401, 402) or oscillator coil (L401) defective
Sound distorted (VU meter functions normally)	1. Faulty recording bias circuit 2. Faulty recording equalization circuit (check TR-103, and L101) 3. Dirty head surface 4. Over-recording input level 5. VU meter lost sensitivity 6. Defective input equipment
Faulty erasing (does not erase at all)	1. Erase head defective 2. Disconnected erase head wire 3. Excessive amount of dust adhering to surface of erase head 4. Check voltage of TR-401, 402
Erasing noise (popping noise)	1. Defective recording tape 2. Transistor TR-401, 402 defective 3. Head magnetized 4. Bias voltage out of adjustment
Recording senstivity low (VU meter functions normally)	1. Dirty head surface 2. Bias voltage out of adjustment 3. TR-103 defective 4. Tape itself defective
(VU meter does not indicate properly)	1. Loose Input Jack connection 2. VU meter sensitivity low 3. REC/PLAY slide switch does not function properly
Sound fades or drops out	1. Dirty head surface 2. Tape itself defective 3. REC/PLAY head defective 4. Recording bias voltage out of adjustment
Much difference in recording levels between left and right channels	1. Difference in sensttivity of the line volume itself 2. Recording level (VR-102 2KB) out of adjustment

4. FM RECEPTION TROUBLE

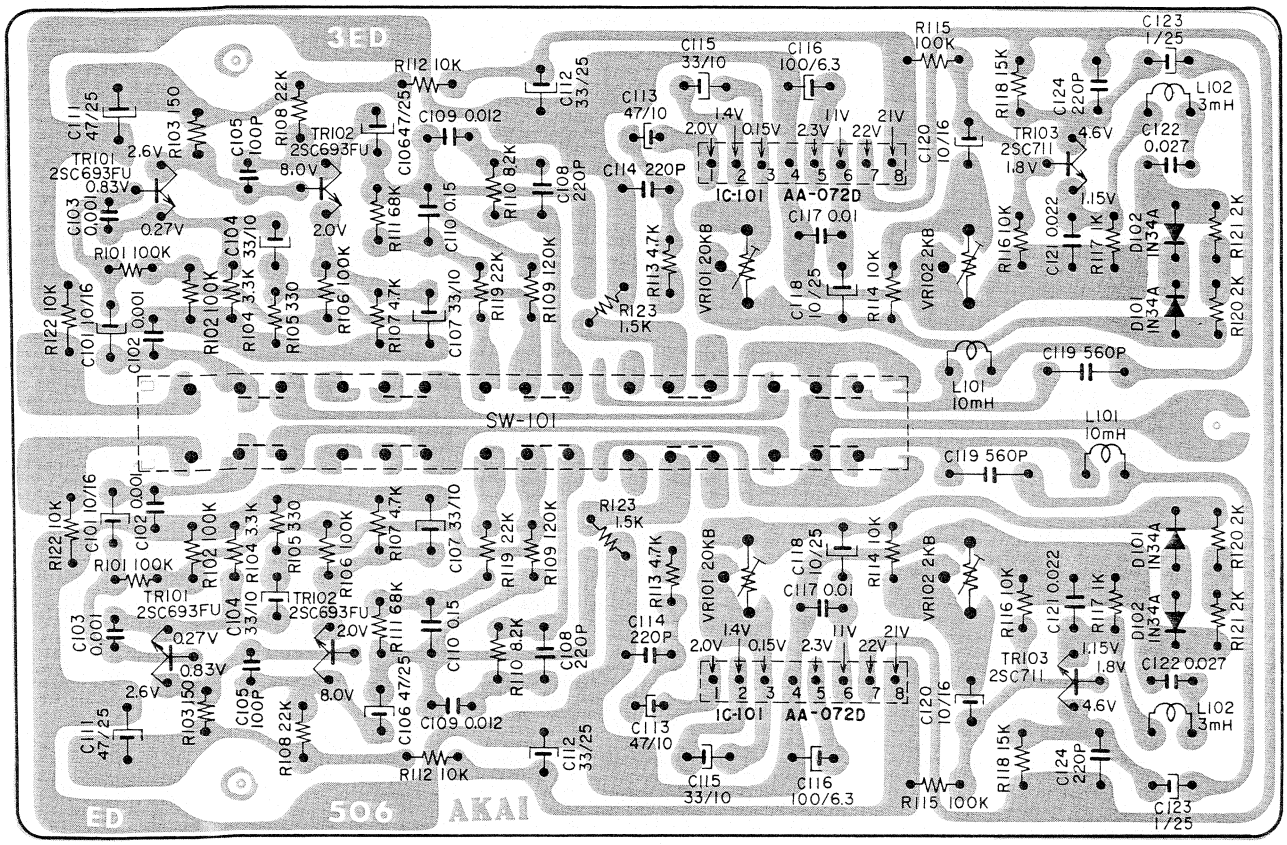
Symptom	Remarks
No FM reception	1. Check front end 2. Check Selector Switch
(FM-IF circuit)	1. Check voltage of TR21 to TR24 2. Check Diode D22 to D24
(MPX circuit)	1. Check voltage of TR1 and TR2 2. Check diode D1 to D4 (IN34A)
Sound satisfactory but Stereo Indicator not lit	1. Check voltage of TR2 (MPX circuit) 2. Check diode D1 to D4 3. Check indicator lamp
Incomplete separation during FM reception	1. Defective circuit of TR1, TR2 and MB42−135A or FM MPX BOARD (ED-A575) 2. Adjust VR_1 (4.7 K) with measuring equipment or stereo FM wave
Excessive noise (Weak broadcasting or weak input signal to amplifier)	1. Orient or replace antenna with a high gain 2. Antenna feeder open or loosely connected
Intermittent noise (Due to automobile ignition noise)	1. Install FM antenna as far away from street as possible

5. AM RECEPTION TROUBLE

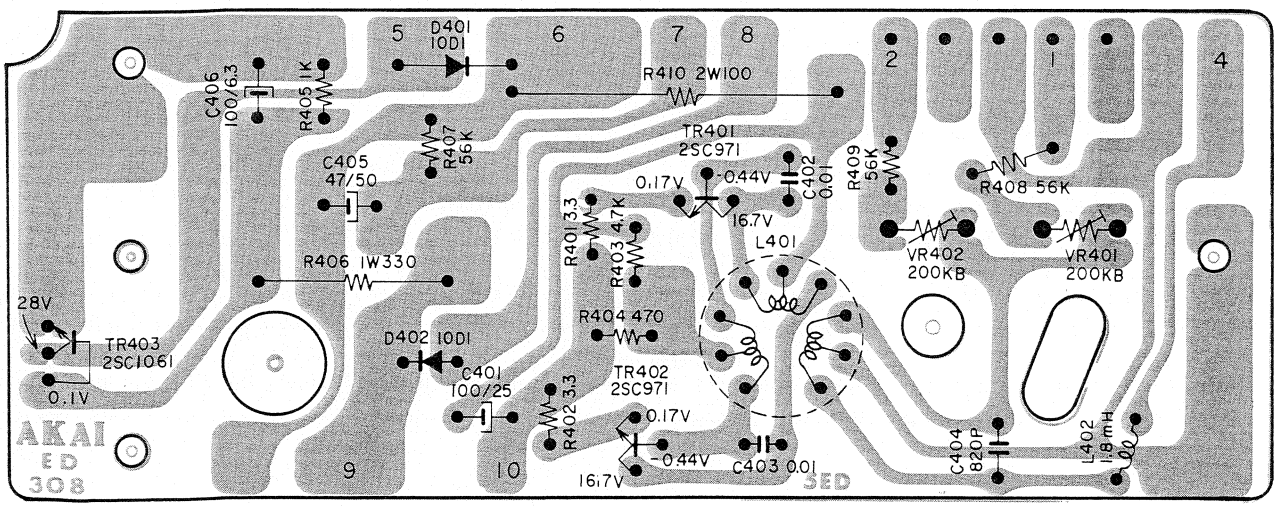
Symptom	Remarks
No AM reception	1. Check voltage of TR23 to TR25 2. Check selector switch
Excessive noise	1. Weak signal (use external antenna)
Hum when tuned to broadcasting station (Due to transmission lines or generating noise of electrical apparatuses) e.g. flouresent lamps, motors, etc. nearby	1. When bar antenna is used, reposition until noise is minimized 2. Reset AC cord plug
Buzzing noise (Due to a TV set nearby)	1. Relocate amplifier

X. COMPOSITE VIEWS OF COMPONENTS

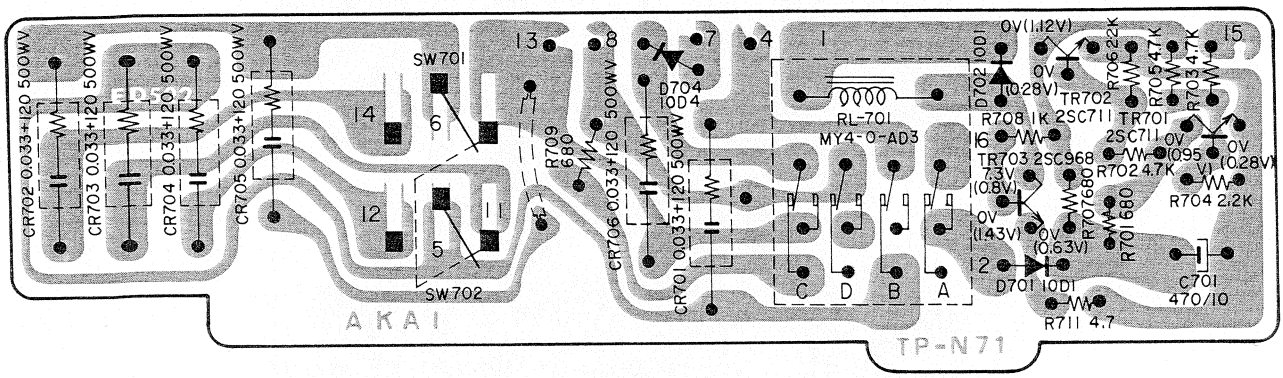
PRE-AMP. P.C. BOARD (ED-506)



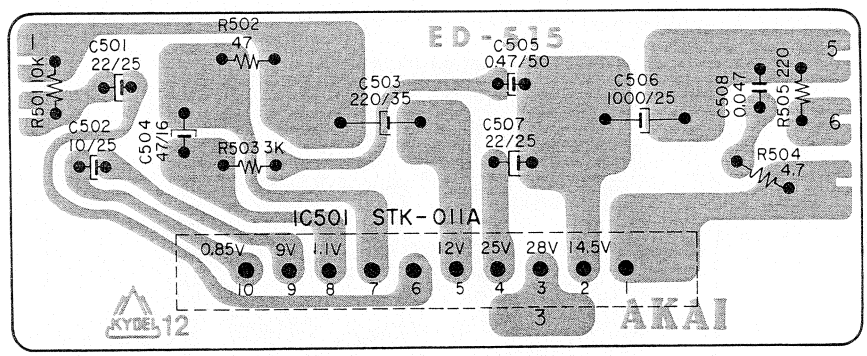
OSC. P.C. BOARD (ED-308)



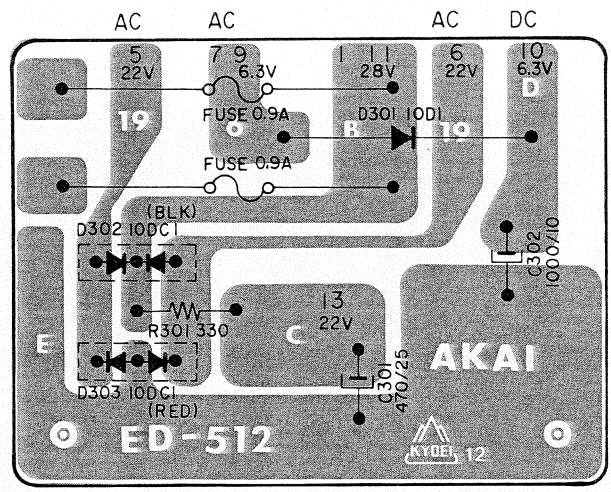
RELAY P.C. BOARD (ED-522)



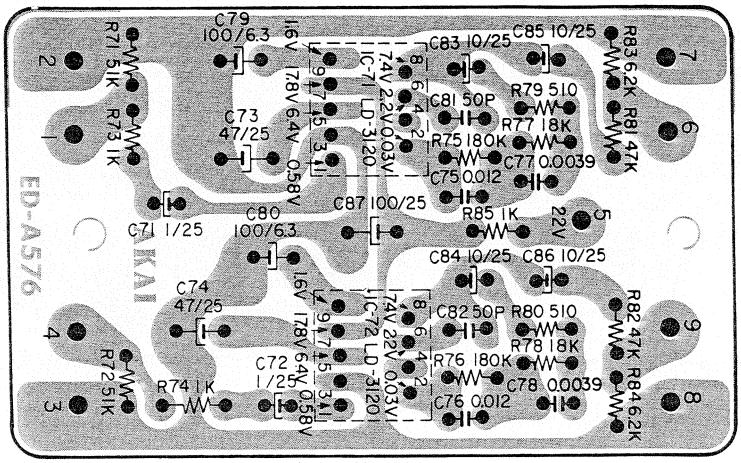
POWER AMP. P.C. BOARD (ED-515)



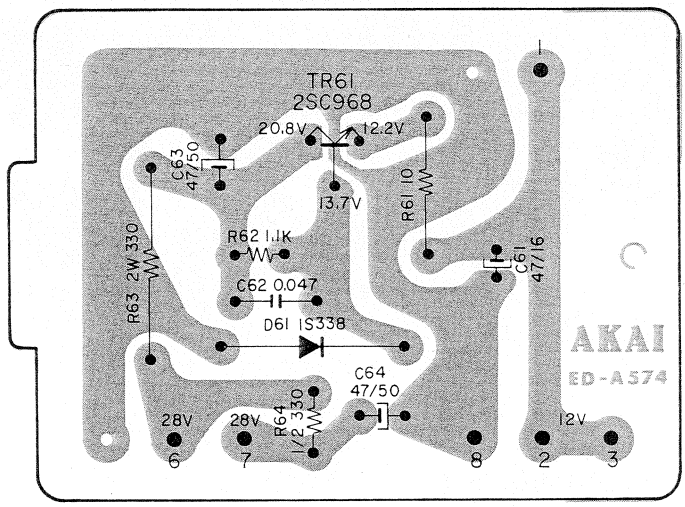
POWER SOURCE P.C. BOARD (ED-512)



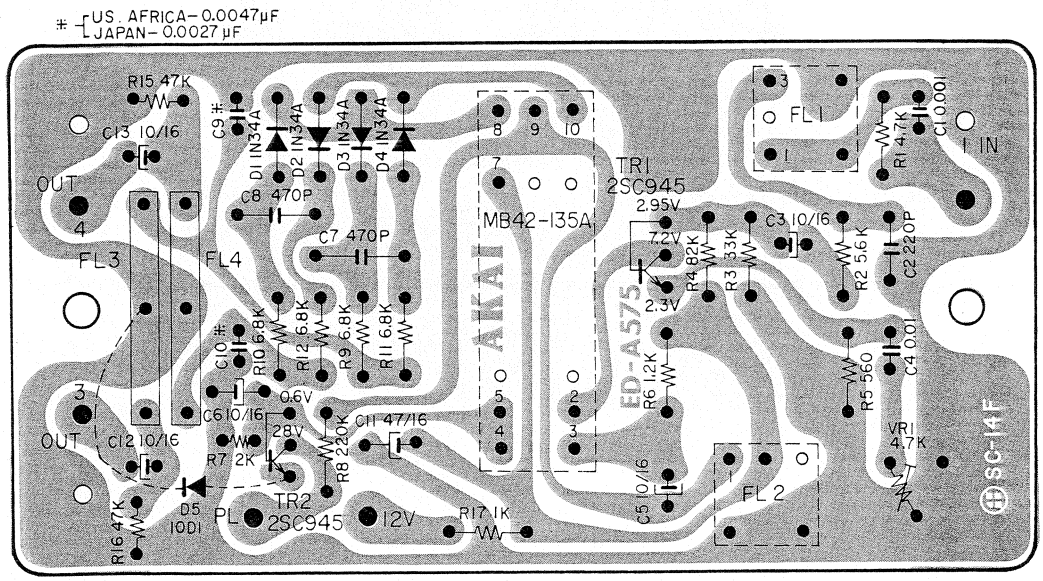
EQUALIZER P.C. BOARD (ED-A576)



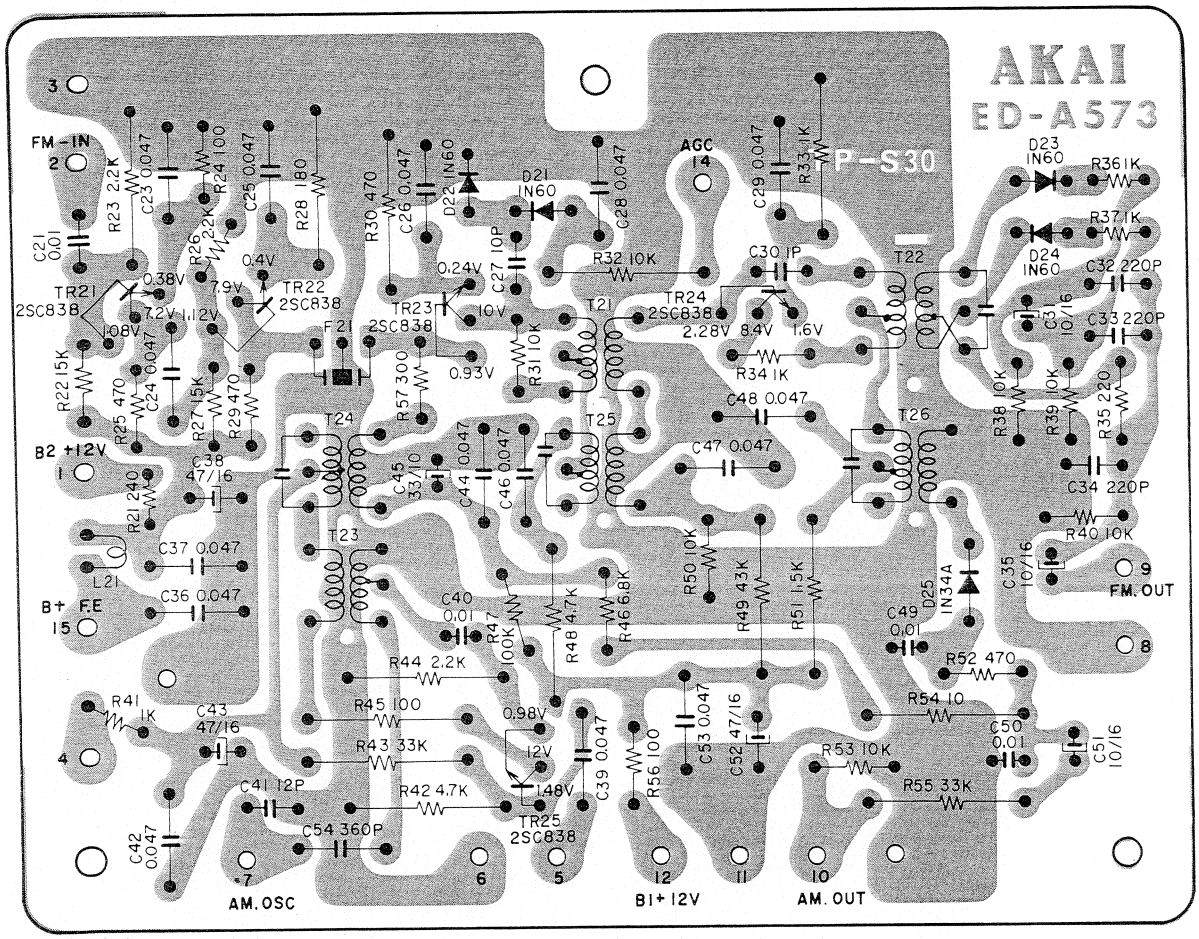
TUNER/POWER SOURCE P.C. BOARD (ED-A574)



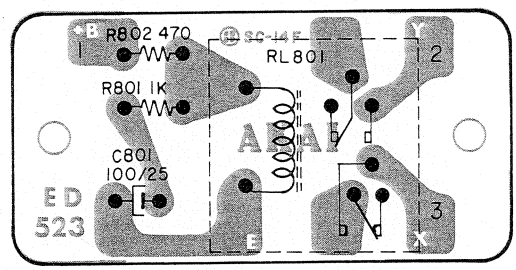
MPX. P.C. BOARD (ED-A575)



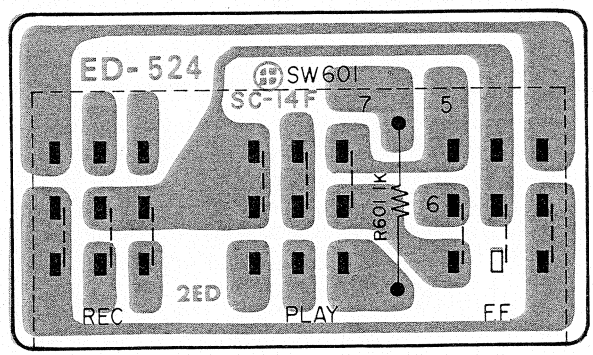
IF. P.C. BOARD (ED-A573)



MUTE P.C. BOARD (ED-523)



MODE SW. P.C. BOARD (ED-524)



CR-80T

BAR ANT

ANT. TER

L1 0.98μH ±15%

FM-AM IF AMP PRINT BOARD. ED-A573

FM FRONT & END VC BLCOK.

EQ AMP PRINT BOARD.

ED-A576

FM MPX PRINT BOARD

ED-A575

POWER REG PRINT BOARD

TR61 2SC968

ED-A574

IC-71. IC-72. LD3120

PRE. AMP. PRINT BOARD. ED-506

VR1 50KB L VOLUM

R VOLUM VR2 50KB

VR3a 100KB TONE CONTROL

VR3b 100KB TONE CONTROL

M1 VU (L)

VU (R) M2

MAIN AMP BLOCK.

IC 501 STK-011A

ED-515

MAIN AMP BLOCK

J 501 L. SPEAKER.

R. SPEAKER

HD PHONE

SW 6 SPEAKERS. MUTE

REC.P.B. HEAD.

ERASE HEAD

O.S.C. PRINT BOARD ED-308

C.S.P.

SW 3 SELECTOR SW

RL1 18Ω

T1 EDT-1

VOLTAGE SELECTOR.

POWER PRINT BOARD ED-512

SW 1 POWER SW

AC

REC LAMP

PROGRAM LAMP

CONT'S PLAY

SW 2

IND. 4 7

ICH

RELAY PRINT BOARD. ED-522

MOTOR

J5

FUNCTION SW. PRINT BOARD.

ED-524

REC PLAY F.F

MUTE PRINT BOARD.

ED-523

INPUT SELECTOR SW5a–c

DIAL LAMP.

IND-1 IND-2 IND-3

FM ST.

PHONO.

LINE IN

LINE OUT

MIC L

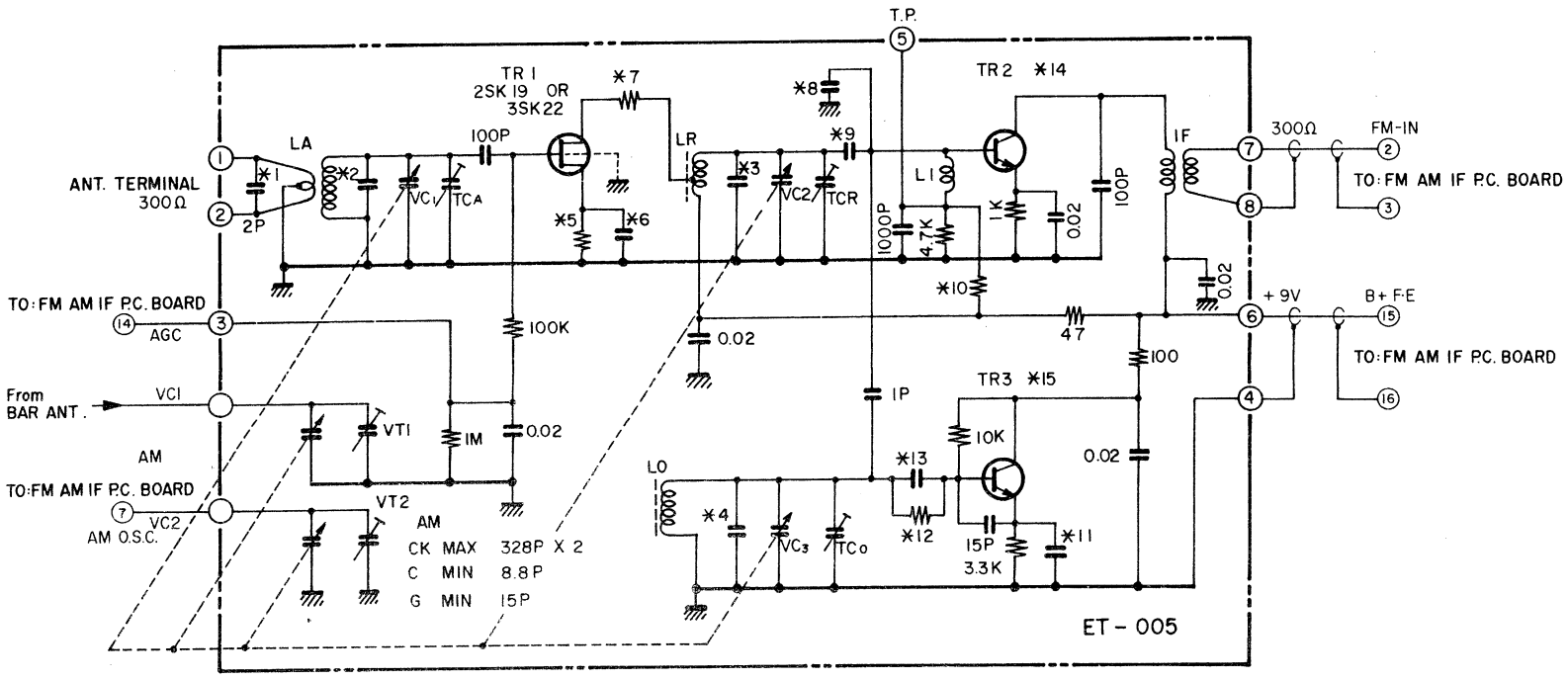
MIC R

STK-011A

CR-80T (BLOCK DIAGRAM)
SCHEMATIC DIAGRAM NO.7-1 1421060A
2C

CR-80T

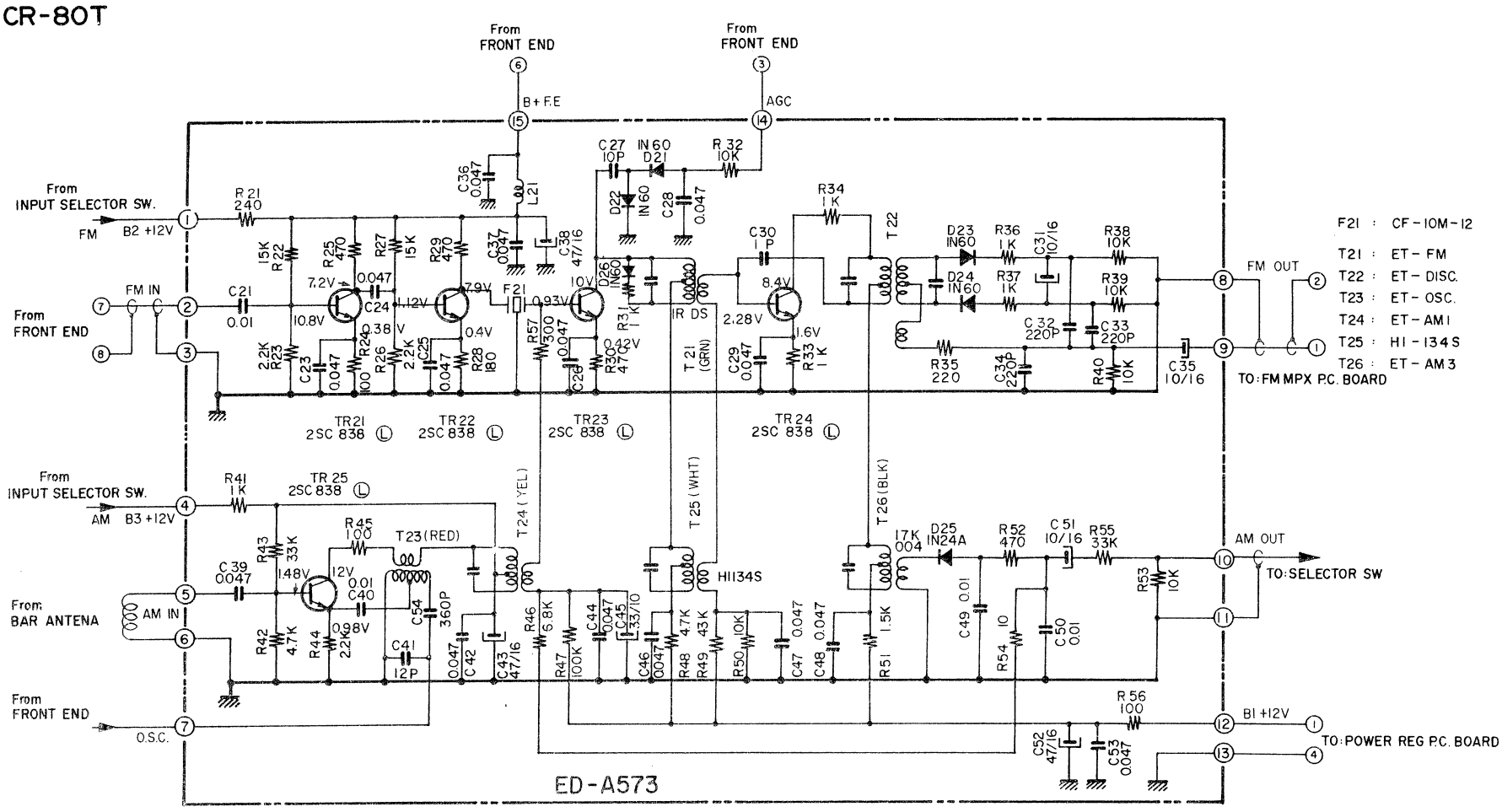
✱1	US				✱7	US	100Ω	JAPAN	47Ω	✱13	US	5P	JAPAN	7P					
✱2	US	8~15P	JAPAN	16~20P	✱8	US	10P	JAPAN		✱14	US	2SC535	JAPAN	2SC394					
✱3	US	10~18P	JAPAN	20~25P	✱9	US	3P	JAPAN	2P	✱15	US	SE3001	JAPAN	2SC394					
✱4	US	18P	JAPAN	15P	✱10	US	22K	JAPAN	15K										
✱5	RANK	(Y)			✱11	US	10P	JAPAN	7P										
✱6	RANK	(GR)	120Ω / 1000P		✱12	US	10K	JAPAN	33K										



CR-80T FM FRONT END SCHEMATIC DIAGRAM

NO.7-2 1421061A

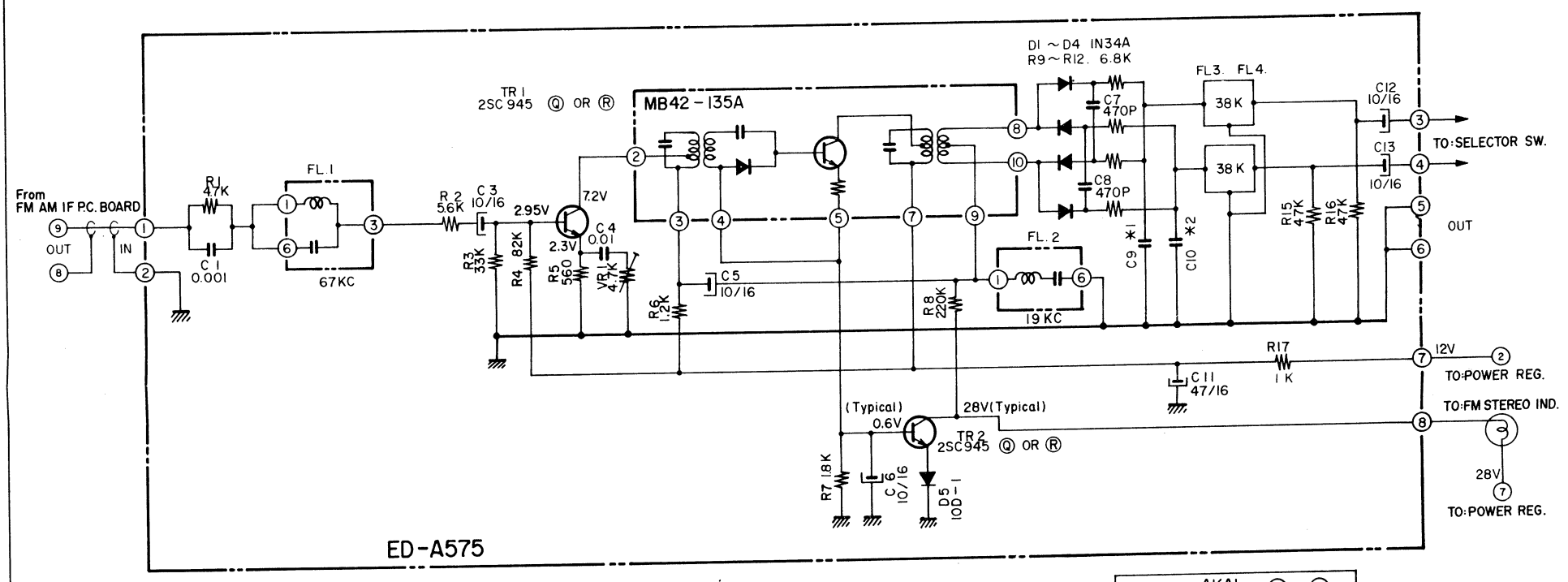
CR-80T



CR-80T FM-AM IF AMP SCHEMATIC DIAGRAM

NO.7-3 1421062A

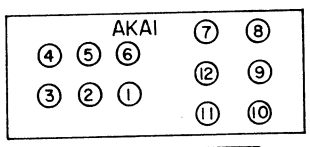
CR-80T

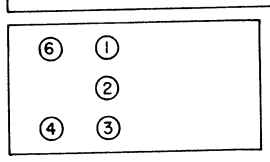


ED-A575

C9 *1, C10 *2 } US. AFRICA : 0.0047 μF
JAPAN : 0.0027μF

FL3 } 422792
FL4 } 01400



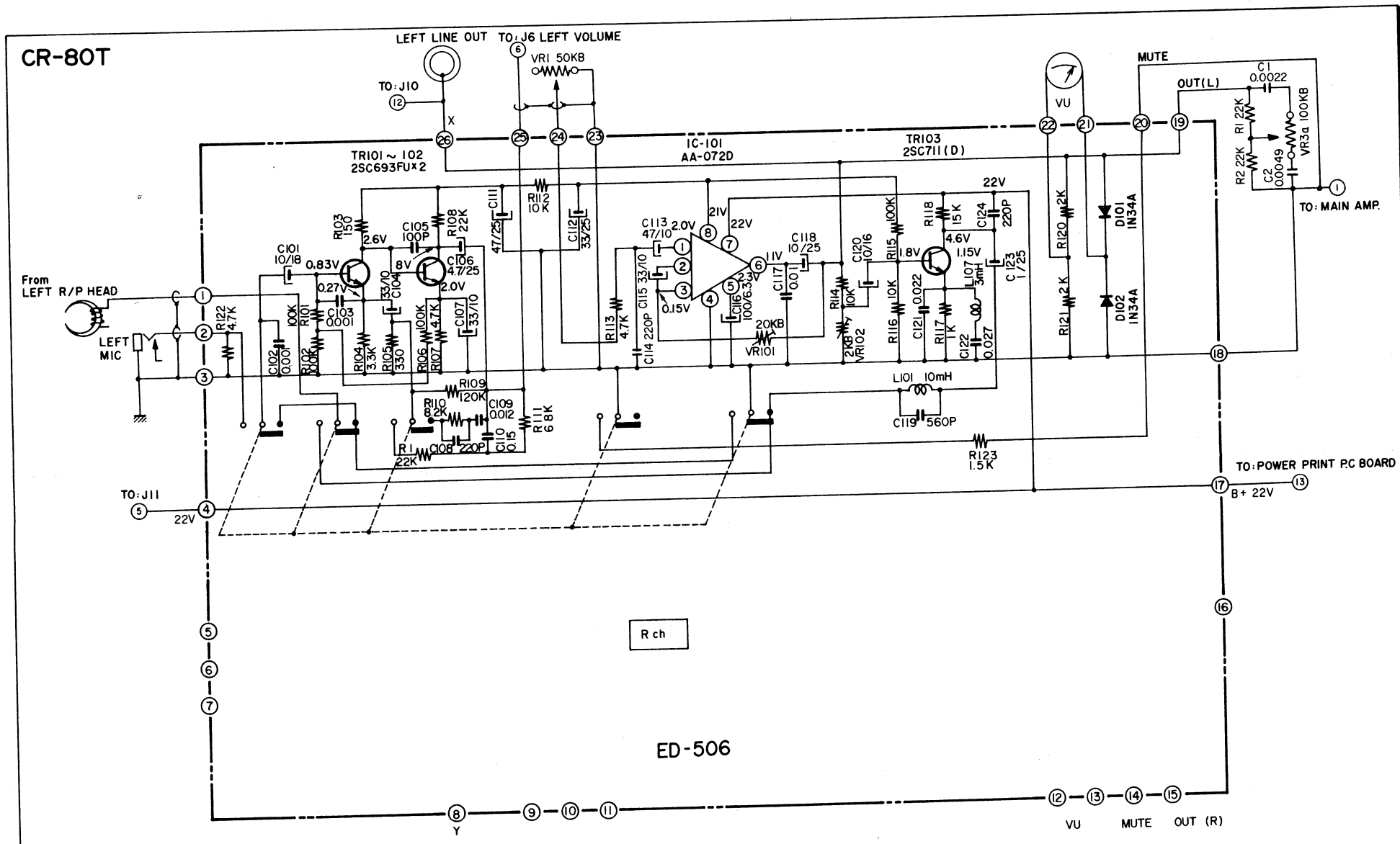


CR-80T FM MPX SCHEMATIC DIAGRAM

NO.7-4 1421063A

2C

CR-80T



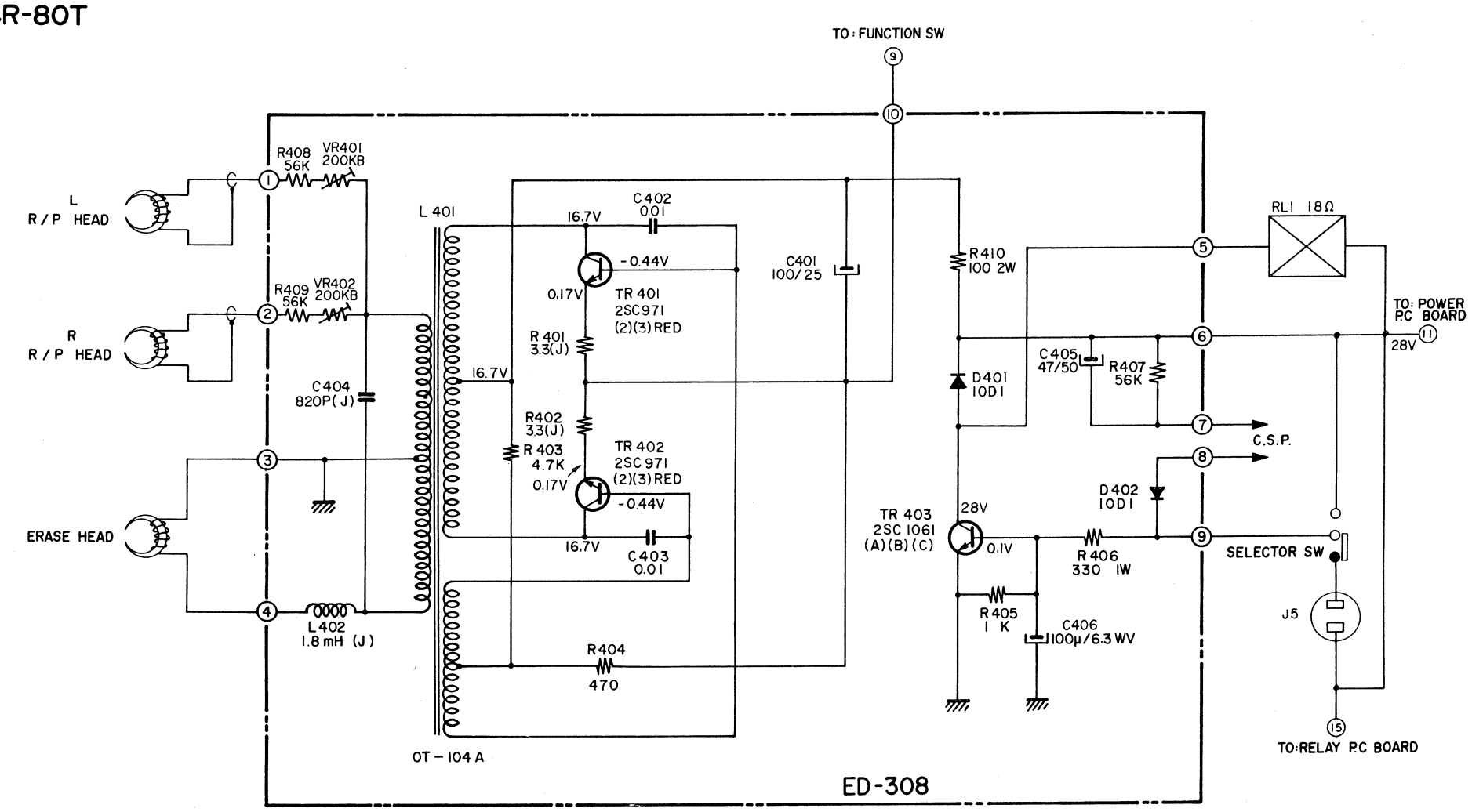
ED-506

CR-80T PRE AMP SCHEMATIC DIAGRAM

NO.7-5 1421064A

2C

CR-80T



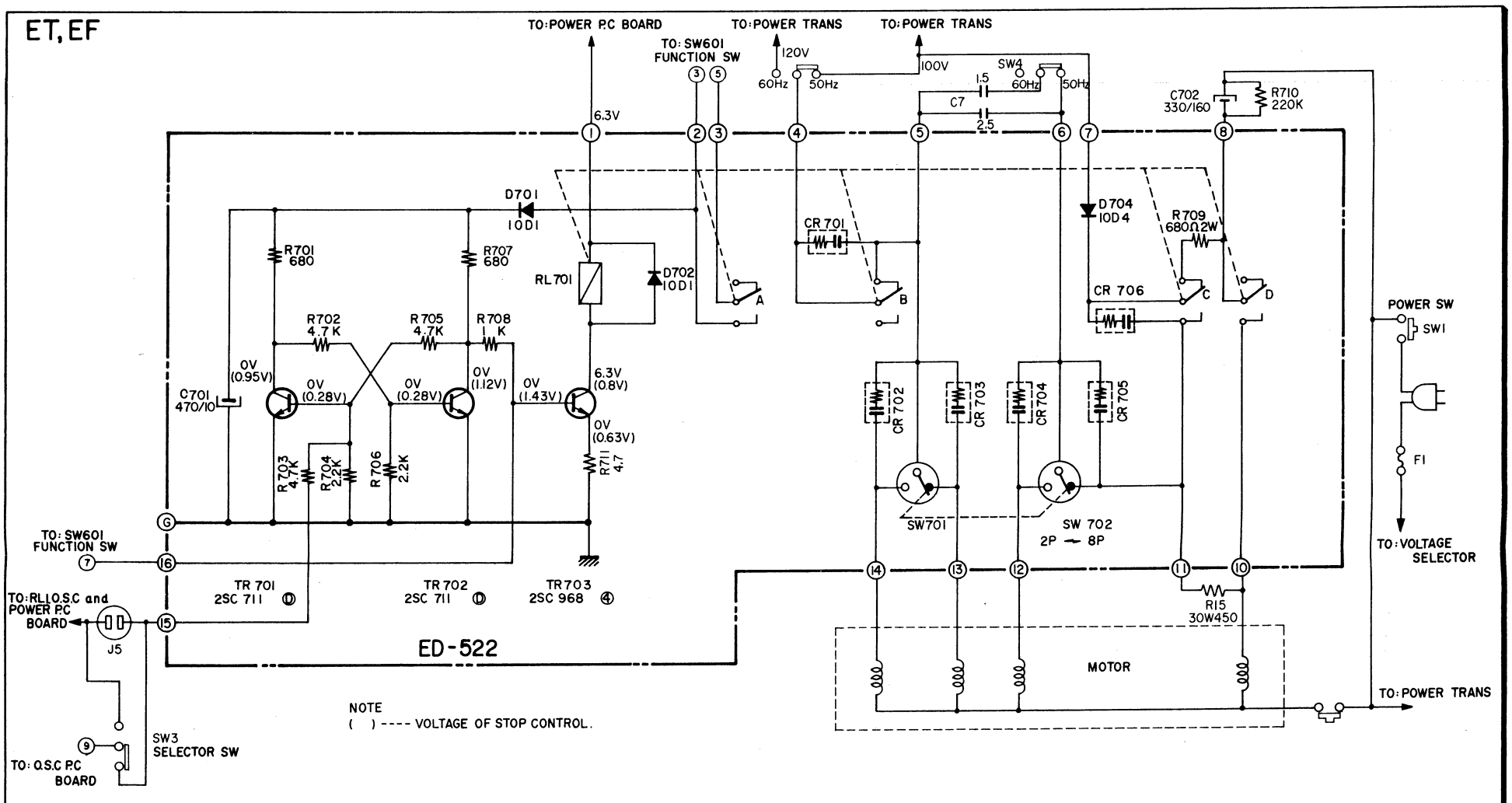
ED-308

CR-80T O.S.C. PRINT BOARD SCHEMATIC DIAGRAM

NO. 7-6 1421065A

2C

ET, EF



ET, EF RELAY PRINT BOARD SCHEMATIC DIAGRAM

NO. 7-7 1421066A

2C